THE OFFICE OF REGULATORY STAFF

DIRECT TESTIMONY AND EXHIBIT

OF

M. ANTHONY JAMES, P.E.

MAY 19, 2009

DOCKET NO. 2005-385-E
EPAct 2005 - Net Metering

DIRECT TESTIMONY OF

M. ANTHONY JAMES

FOR

THE OFFICE OF REGULATORY STAFF

DOCKET NO. 2005-385-E

IN RE: EPAct 2005 - NET METERING

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND OCCUPATION.

A. My name is Anthony James. My business address is 1401 Main Street, Suite 900, Columbia, South Carolina 29201. I am employed by the State of South Carolina as Senior Specialist in the Electric Department of the Office of Regulatory Staff ("ORS").

Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I received a Bachelor's Degree in Engineering from the University of South Carolina. I also received a Master's Degree in Earth and Environmental Resources Management from the University of South Carolina. I have over twenty years of experience as a project engineer in environmental regulatory compliance. I am a Professional Engineer registered in the State of South Carolina, a member of the South Carolina Society of Professional Engineers, and a member of the NARUC Staff Subcommittee on Electricity.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide ORS's recommendations regarding net metering in response to the Public Service Commission of South Carolina ("Commission") Notice of Hearing issued February 3, 2009. Section 1251 of the Energy Policy Act of 2005 ("EPAct") defines net metering as "service to an electric consumer under which electric energy generated by that electric consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provided by the electric utility to the electric consumer during the applicable billing period."

Q. COULD YOU PLEASE PROVIDE SOME BACKGROUND ON HOW ORS DEVELOPED ITS RECOMMENDATIONS?

A. Yes. In response to the H.3395 Joint Resolution approved May 13, 2008, ORS and the South Carolina Energy Office ("SCEO") prepared a report for the General Assembly recommending processes and procedures for establishing net metering programs at all distribution electric utilities in South Carolina. The report, *Net Metering in South Carolina: Current Status and Recommendations* ("Report"), provides general background on net metering and interconnection, describes the status of net metering and interconnection for utilities in South Carolina, and offers recommendations to improve and enhance net metering in South Carolina. The full Report was issued on January 1, 2009 and is attached to my testimony as Exhibit MAJ-1. My testimony is based on the Report recommendations.

Q. DID STAKEHOLDERS ASSIST IN DEVELOPING THE REPORT RECOMMENDATIONS?

A. Yes. ORS and SCEO were assisted by stakeholders representing electric providers, distributed generation installers, renewable energy generators, legislators, and community representatives who volunteered considerable time to supply information, review drafts and offer comments. See Appendix D of Exhibit MAJ-1. On October 28, 2008, ORS and SCEO met with the stakeholders to finalize the recommendations presented in the Report.

Q. WOULD YOU PLEASE BRIEFLY DESCRIBE ORS'S RECOMMENDATIONS FOR NET METERING?

A. Yes. ORS's recommendations are consistent with the seven recommendations presented in the Report. The overall intent of the recommendations is to help establish net metering programs that are more user friendly. An overwhelming amount of comments from the stakeholders pertained to the difficulty to understand Time-of-Use Demand tariffs and the difference between multiple net metering options offered by the various utilities operating in South Carolina. ORS's net metering recommendations are as follows:

1. *Standardize net metering program structure across utilities.*
2. *For residential customers, modify the flat rate option to reflect 1:1 standard retail rates for excess energy credits.*
3. *Acknowledging that recommendation #2 may create cross-subsidization and impact a utility's cost of service, utilities should be allowed to recover these costs subject to measurement and verification.*
4. *Eliminate stand-by charges for residential customers.*
5. *Allow renewable energy generators to retain ownership of Renewable Energy Credits ("RECs").*

6. *Require annual reporting to ORS and SCEO stating the number of net metering customers by renewable energy generator type in order to allow for continuing assessment of net metering programs.*
7. *Formally revisit the net metering process within 4 years.*

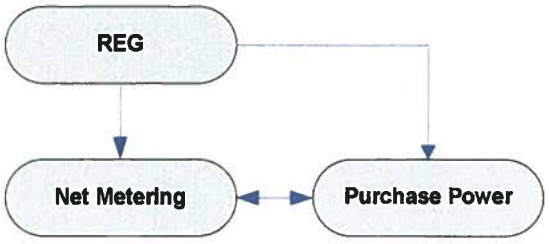
Q. WOULD YOU PLEASE ELABORATE ON RECOMMENDATION #1 TO STANDARDIZE NET METERING PROGRAM STRUCTURE ACROSS UTILITIES?

A. Yes. To simplify and standardize the net metering process and adhere to the EPAct definition of net metering, the first step must be to separate net metering programs from purchase power programs. Currently, these two programs are closely intertwined, which leads to much of the confusion. Whether it is a direct purchase of power by the host utility or an indirect transaction with a "green power" purchasing program like Palmetto Clean Energy ("PaCE"), these types of purchase power programs should be separated from net metering programs. With this simplification and separation, it is expected that net metering customers would not be eligible to participate in PaCE. Only customers under a Buy-All/Sell-All or Offset/Sell purchase power agreement with the host utility would be eligible to participate in PaCE.

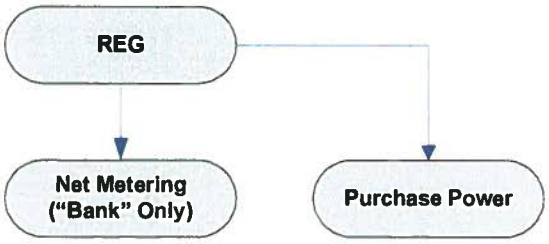
Therefore, ORS recommends that net metering programs exclusively reflect a "banking" of excess generation that only credits a customer's monthly bill on a kilowatt-hour (kWh) basis. Net metering programs would not incorporate, in any manner, the purchase of excess generation from a renewable energy generator ("REG"). Utility purchases of excess generation would be addressed separately through purchase power contractual agreements with the

REG and not be considered a part of net metering. The diagrams below illustrate the current structure of net metering programs and the structure of net metering programs recommended by ORS.

Current Structure



Recommended Structure



This approach reduces the multiple net metering options and reduces the number of tariffs/riders associated with the current structure of net metering programs. This strategy simplifies net metering by establishing a "pure" net metering program across utilities. Any net excess generation will be applied as an energy credit to a consumer's monthly bill to offset usage on a kilowatt-hour (kWh) basis. A REG will only be allowed to "bank" its net excess generation. However, annually, the accumulated balance of net excess generation not used to offset usage would be set to zero.

The following is an example of "banking" net excess generation:

Month 1:	
Energy Used	1,000 kWh
Renewable Energy Generated	200 kWh
Net Energy Billed	**800 kWh**

Month 2:	
Energy Used	1,000 kWh
Renewable Energy Generated	1,200 kWh
Net Energy Billed	**0 kWh**
Bank (Deposit)	200 kWh
Month 3:	
Energy Used	1,000 kWh
Renewable Energy Generated	0 kWh
Bank (Withdrawal)	200 kWh
Net Energy Billed	**800 kWh**

Establishing a standardized net metering program based on the "banking" of net excess generation which credits a customer's monthly bill greatly simplifies the net metering processes by providing consistency across utilities. This approach encourages the development of renewable resources in the State by offering a single set of "rules" for all stakeholders which includes utilities, installers and REGs, as well as regulatory agencies. ORS also recommends that utilities offer only one net metering rider which references each of its residential rate schedules. ORS encourages the utilities to work together to ensure the structure of the rider is consistent.

Q. WOULD YOU PLEASE ELABORATE ON RECOMMENDATION #2?

A. Yes. **Recommendation #2:** For residential customers, modify the flat rate option to reflect 1:1 standard retail rates for excess energy credits.

This recommendation builds on the flat rate option currently offered by the utilities which allows REGs to offset their usage at the standard retail rate but provides credits for net excess generation based on avoided cost rates. This recommendation replaces the avoided cost rate credit with a standard retail rate credit for all residential rate schedules. In summary, ORS recommends that for

residential net metering customers only, utilities offer net metering which offsets usage and provides credits for net excess generation based on the retail rate for each residential rate schedule on a kilowatt-hour for kilowatt-hour basis.

Q. WOULD YOU PLEASE ELABORATE ON RECOMMENDATION #3?

A. Yes. **Recommendation #3:** Acknowledging that Recommendation number #2 may create cross-subsidization and impact a utility's cost of service, utilities should be allowed to recover these costs subject to measurement and verification.

Assuming renewable generation benefits all users, the costs incurred by the utilities resulting from Recommendation #2 are best recovered, at this time, from all customer classes on a system-wide basis and should not impact shareholders. Utilities should be allowed to establish a mechanism to recover such costs via an annual rider or other appropriate mechanism.

Q. WOULD YOU PLEASE ELABORATE ON RECOMMENDATION #4 TO ELIMINATE STAND-BY CHARGES FOR RESIDENTIAL CUSTOMERS?

A. Yes. Each utility has an obligation to provide electrical service to all of its retail customers. Stand-by service charges are intended to recover the utility's costs for maintaining additional facilities that generally provide electrical service to customers with large on-site generation in the event their on-site self generation is forced off-line. However, given the small size of residential renewable generation systems and the overall limitation on participation in net metering programs (0.2% of SC jurisdictional peak load), the utilities should be fully capable of providing electrical support to these smaller systems without additional

facilities and without a measurable impact on the system. Therefore, residential net metering customers should not be subject to paying stand-by charges under these current limitations.

Q. WOULD YOU PLEASE ELABORATE ON RECOMMENDATION #5 TO ALLOW RENEWABLE ENERGY GENERATORS TO RETAIN OWNERSHIP OF RENEWABLE ENERGY CREDITS ("RECS")?

A. Yes. In August 2007, the Commission ruled in this Docket that RECs would be addressed once a viable market exists. Since then, the market for RECs has been slowly developing and there is open interest in the ownership of RECs by renewable energy generators.

Once a market for RECs is fully developed, renewable energy generators should retain ownership of RECs associated with energy generated and used to offset usage. However, annually, any RECs associated with net excess generation are granted to the utility when the net excess generation balance is set to zero.

Q. WOULD YOU PLEASE ELABORATE ON RECOMMENDATION #6?

A. Yes. **Recommendation #6:** Require annual reporting to ORS and SCEO stating the number of net metering customers by renewable energy generator type in order to allow for continuing assessment of net metering programs.

Each utility should provide an annual report summarizing its net metering activity to ORS and SCEO. The annual report should coincide with the annual demand-side management reports to the SCEO, as currently required by state law.

Q. WOULD YOU PLEASE ELABORATE ON RECOMMENDATION #7 TO FORMALLY REVISIT THE NET METERING PROCESS WITHIN 4 YEARS?

A. Yes. ORS recommends that this Commission revisit this Docket or open a new Docket within 4 years to ensure that net metering programs continue to appropriately reflect state energy policy.

Q. DOES THE REPORT ALSO CONTAIN RECOMMENDATIONS REGARDING INTERCONNECTION STANDARDS?

A. Yes, it does.

Q. IS ORS MAKING THOSE RECOMMENDATIONS IN THIS PROCEEDING?

A. While ORS certainly encourages the report recommendations regarding interconnection standards, those recommendations are not part of this Docket.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

EXHIBIT MAJ-1

Net Metering in South Carolina:

Current Status and Recommendations

Prepared in response to H. 3395 (2008)

A Joint Resolution Requiring Recommendations for Establishing Net Metering Programs in South Carolina

Office of Regulatory Staff

South Carolina Energy Office

January 1, 2009

Table of Contents

Executive Summary

This report has been prepared in response to H.3395 Joint Resolution approved May 13, 2008 (See Appendix A), requiring the South Carolina Office of Regulatory Staff and South Carolina Energy Office to provide a report to the General Assembly recommending processes and procedures for establishing net metering programs at all distribution electric utilities in South Carolina. While not the subject of this report, the electric cooperatives and municipal-owned electric utilities were requested to provide recommendations as part of the report (See Appendices B and C). The report provides background on net metering and interconnection in general, describes the status of net metering and interconnection for utilities in South Carolina, and offers recommendations for action.

The staffs of the Office of Regulatory Staff and the Energy Office were assisted by representatives of the utilities, by a group of distributed energy installers, generators, legislators, and community representatives who volunteered considerable time to supply information, review drafts and offer comments. In addition many of these advisors met with representatives of Office of Regulatory Staff and the Energy Office on October 28, 2008 and November 14, 2008. We are very grateful to the individuals listed in Appendix D for their assistance in developing this report.

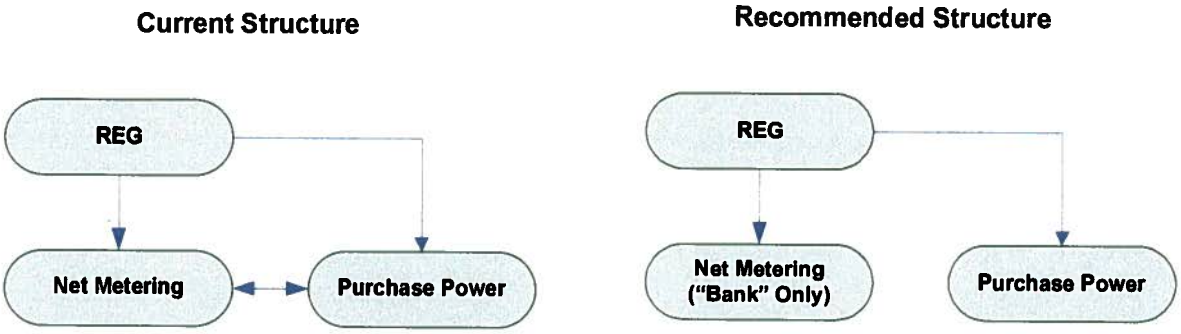
Some proponents of renewable energy have expressed concern that current utility policies for net metering are difficult to interpret, uneven across utilities and discouraging to consumers hoping for some offset for expensive equipment purchases.

While net metering in South Carolina is in its infancy, and while the number of affected consumers is small - a total of twelve net metering customers as of August 2008 - there is potential to make adjustments to maximize the use of renewable energy in South Carolina.

After careful consideration of current policies and practices in South Carolina and neighboring southeastern states, as well as comments provided by a dedicated group of volunteer advisors, the Office of Regulatory Staff and the Energy Office have developed recommendations that only apply to the investor-owned utilities (IOUs) and Santee Cooper's retail operations. However, the remaining utilities which were required to consider net metering in accordance with EPAct 2005 should use the recommendations as a resource as they continue to develop their net metering programs. The recommendations are intended to enhance existing net metering programs and interconnection standards. See Part II of this report for detailed recommendations. Below is a brief synopsis of those recommendations:

Recommendations – Net Metering Structure:

The intent of the recommendations is to help establish net metering programs that are more "user friendly." To simplify the net metering process, the first step must be to separate net metering programs from purchase power programs. Currently, these two programs are closely intertwined, leading to much confusion. The diagrams below illustrate the current structure of net metering programs in SC and the structure of net metering programs recommended herein.



This approach will greatly simplify the process by reducing the multiple options currently offered by the utilities as net metering and by focusing on establishing a "pure" net metering program. A renewable energy generator (REG) will only be allowed to "bank" its excess generation that will then be applied as a credit to a consumer's monthly bill to offset usage.

Recommendations - Net Metering:

1. *Standardize net metering program structure across utilities.*

2. *For residential customers, modify the IOU flat rate option to reflect 1:1 standard retail rates for excess energy credits.*

3. *Acknowledge that recommendation number 2 may create cross-subsidization and impact a utility's cost of service, allow utilities to recover these costs, subject to measurement and verification of these costs.*

4. *Eliminate stand-by charges for residential customers.*

5. *Allow renewable energy generator to retain ownership of Renewable Energy Credits (RECs).*

6. *Require annual reporting to SC Office of Regulatory Staff and SC Energy Office of the number of net metering customers by renewable energy generator type, in order to allow for continuing assessment of net metering programs.*

7. *Formally revisit the net metering process within 4 years.*

Recommendations - Interconnection Standards

1. *Standardize interconnection standards across utilities.*

2. *Adopt FERC 3-Tier Interconnection Standards as revised by North Carolina Utilities Commission. In the interest of safety, SC Interconnection Standards should give utilities the discretion to determine whether to require an external disconnect switch.*

3. *Require annual reporting to SC Office of Regulatory Staff and SC Energy Office of the number of requests and successful interconnections by renewable energy generator type, in order to allow for continuing assessment of SC Interconnection Standards.*

4. *Formally revisit the SC Interconnection Standards within 4 years.*

Abbreviations

DOE	U.S. Department of Energy
EPAct	Energy Policy Act of 2005
IOU	Investor-Owned Utility
kW	Kilowatt
kWh	Kilowatt Hour
MW	Megawatt
NCUC	North Carolina Utilities Commission
NEG	Net Excess Generation
ORS	South Carolina Office of Regulatory Staff
PSC	Public Service Commission of South Carolina
PURPA	Public Utility Regulatory Policies Act
PV	Photovoltaic
QF	Qualifying Facility (as defined by PURPA)
REC	Renewable Energy Credit
REG	Renewable Energy Generator
SCE&G	South Carolina Electric & Gas Company
SEARUC	Southeastern Association of Regulatory Utility Commissioners
SRR	Standard Residential Rate
TRA	Tennessee Regulatory Authority
TVA	Tennessee Valley Authority
TOU	Time-of-Use
TOUD	Time-of-Use Demand

Definitions

Avoided Cost: The cost a utility would have incurred if it had constructed a generating facility itself to supply power or obtained the power from another source.

Bi-directional meter: A meter that runs and records electricity in both directions.

Biomass energy/Bioenergy: Bioenergy is renewable energy made from any organic material from plants or animals. Sources of bioenergy are called "biomass," and include agricultural and forestry residues, municipal solid wastes, industrial wastes, and terrestrial and aquatic crops grown solely for energy purposes. Biomass resources are used to generate electricity and power, and to produce liquid transportation fuels, such as ethanol and biodiesel.

Cross-Subsidization: Cross subsidization is where a select customer or group of customers is allowed to pay less than a utility's cost of providing electric service, which results in the other customers in the same category or class being charged relatively more for electric service.

Electrical grid: An integrated system of electricity, transmission and distribution, usually covering a large area.

External Disconnect: Switch gear used to connect or disconnect components of a renewable generator (e.g., a photovoltaic system) that is located outside a home or business.

Fuel cell: A device capable of generating an electrical current by converting the chemical energy of a fuel (e.g., hydrogen) directly into electrical energy. Fuel cells differ from conventional electrical cells in that the active materials such as fuel and oxygen are not contained within the cell but are supplied from outside. It does not contain an intermediate heat cycle, as do most other electrical generation techniques.

Geothermal: Heat from the Earth, which is accessed by drilling water or steam wells in areas ranging from shallow ground to hot water and rock several miles below the Earth's surface.

Interconnection Standards: Interconnection standards govern the technical and procedural process by which an electric customer connects an electric-generating system to the grid. Interconnection standards specify the technical, contractual, metering, and rate rules that system owners and utilities must abide by. Standards for systems interconnected at the distribution level are typically adopted by state public utility commissions, while the Federal Energy Regulatory Commission has adopted standards for systems interconnected at the transmission level. Not all states have adopted interconnection standards, and some states' standards apply only to investor-owned utilities – not to municipal utilities or electric cooperatives.

Kilowatt (kW): A standard unit of electrical power equal to 1000 watts, equivalent to 746 horsepower.

Kilowatt-Hour (kWh): A measure of electricity defined as a unit of work or energy, measured as 1 kilowatt (1,000 watts) of power expended for 1 hour. One kWh is equivalent to 3,412 Btu.

Net Metering: Net metering enables customers to use their own generation to offset their consumption over a billing period by allowing their electric meters to turn backwards when they generate electricity in excess of their demand. This offset means that customers receive retail prices for the excess electricity they generate. Without net metering, a second meter is usually installed to measure the electricity that flows back to the provider, with the provider purchasing the power at a rate much lower than the retail rate.

Peak load: The maximum energy demand or load in a specified time period.

Photovoltaic: Pertaining to the direct conversion of light into electricity.

Purchase Power Agreement (PPA): An agreement to buy power from an entity/facility that produces electricity.

Renewable Energy: The term ''renewable energy'' means electric energy generated from solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project.

Renewable Energy Credits (RECs): RECs are also known as Green tags, Renewable Energy Certificates, or Tradable Renewable Certificates. RECs are tradable environmental commodities in the United States which represent proof that 1 megawatt-hour (MWh) of electricity was generated from an eligible renewable energy resource.

Time-of-Use (TOU): TOU rates are based on the time of day and season a customer uses electricity and a utility's cost of supplying electricity during that time. If a customer uses electricity when a utility's cost is low - known as off-peak hours, a customer's rate will be lower than the standard rate. However, electricity used during periods of high cost - known as on-peak hours - will cost more than the standard rate.

Time-of-Use Demand (TOUD): A time-of-use rate which includes a demand charge (kW) based on a customer's demand measured for the on-peak period during the month.

Introduction

According to the U. S. Department of Energy, "net metering programs serve as an important incentive for consumer investment in renewable energy generation." As the state and the nation strive for more energy independence, encouraging the development and installation of a variety of renewable energy technologies becomes increasingly important. According to the Energy Information Administration, South Carolinians spent approximately $5.9 billion on electricity alone, in 2007. Because the state has no coal, uranium or (known) natural gas deposits, money spent on fuel leaves the state to benefit other states or countries. Use of distributed renewable energy sources such as solar power helps to limit the flow of money out of state.

In addition, increased use of renewable energy will help South Carolina respond to increasing concerns over carbon emissions. There is increasing interest in state and local responses to climate change. Ten bills dealing with climate change were introduced in Congress in 2008 alone.

As described by the U. S. Department of Energy, "(n)et metering enables customers to use their own generation to offset their consumption over a billing period by allowing their electric meters to turn backwards when they generate electricity in excess of their demand. This offset means that customers receive retail prices for the excess electricity they generate. Without net metering, a second meter is usually installed to measure the electricity that flows back to the provider, with the provider purchasing the power at a rate much lower than the retail rate."

According to the Florida Solar Energy Center, the capital cost of installing solar photovoltaic equipment is often the single most important factor limiting its use. The U. S. Department of Energy reports that a 2-kW system, which will offset a portion of the electricity needs of an energy efficient home, will cost about $8 to $10 per watt ($16,000 to $20,000). South Carolina's renewable energy tax credit allows taxpayers to receive 25% of the cost of purchase and installation of solar (and small-scale hydro) equipment, up to $3,500 per year over ten years, for a maximum of $35,000. The recently renewed Federal solar tax credit allows for an additional 30% that may be carried forward for one additional year. While the tax credits can significantly aid in recovering a consumer's investment over time, the initial cost is still prohibitive for most residents of the state and may contribute to the low participation rate in net metering programs. The substantial capital cost also contributes to demand for easily understood net metering programs so that customers interested in installing renewable energy systems can better predict the economic return on their investment.

The legislation leading to this report grew from concerns voiced by proponents of renewable energy that current utility policies toward net metering were difficult to interpret, uneven across utilities and discouraging to consumers hoping for some offset for expensive equipment purchases.

Part I of the report provides a general discussion about net metering to include its regulatory foundation, programs in adjacent states and the current status of net metering in South Carolina. Part II of the report offers recommendations for potential legislative and regulatory actions designed to create a more uniform, accessible and fair approach to net metering.

Background and Current Relevant Programs

The Public Utility Regulatory Policies Act (PURPA) was enacted in 1978 in response to concerns about energy shortages. One aspect of the law was designed to encourage the development of cogeneration and renewable energy facilities. In addition, as stated in the law, PURPA was to encourage: 1) the conservation of energy supplied by electric utilities; 2) optimal efficiency of electric utility facilities and resources; and 3) equitable rates for electric consumers.

PURPA has been amended several times, most recently by the Energy Policy Act of 2005 (EPAct), which was signed into law August 8, 2005 by President George W. Bush. EPAct amends Section 111(d) of PURPA to require states and utilities to consider, and make a determination about whether it is appropriate to implement, five new federal standards, including net metering (EPAct Section 1251) and interconnection (EPAct Section 1254).

Subtitle E of EPAct contains sections 1251 and 1254 that add the additional "states-must-consider" standards to PURPA. Note that PURPA requires that its "states-must-consider" provisions apply only to electric utilities over a certain minimum size threshold. Only utilities with annual retail sales greater than 500 million kilowatt hours (kWh) are required to complete the consideration and determination set forth under Section 111(d) of PURPA, (16 U.S.C. § 2621(d) (11)), "net metering", and subsection (15), "interconnection." Further, under Title I of PURPA, the U.S. Department of Energy (DOE) is required to publish a list identifying each electric utility for which Title I is applicable. The DOE list of U.S. Electric Utilities Covered by Title 1 of PURPA published in August of 2008 is attached to this report as Appendix E.

Section 1251 of the EPAct requires that state commissions, with respect to each electric utility for which the state commission has ratemaking authority, and non-regulated electric utilities must consider standards for net metering within 2 years of enactment, and implement these standards within the next year.

If the commission or non-regulated electric utility has implemented or conducted a proceeding to consider implementing a standard or the state legislature has voted on the implementation of a standard then the Commission or non-regulated utility is not required to take any further action to consider the regulatory standard.

According to the EPAct, net metering service is defined as a service to an electric consumer under which electric energy generated by that consumer from an eligible on-site generating facility and delivered to the local distribution facilities may be used to offset electric energy provided by the utility to the consumer during the applicable billing period.

Net metering allows customers to generate their own energy and use this energy to offset their electric needs. Eligible on-site generation varies from state to state, but examples include solar and wind energy.

In addition to the net metering requirement, Section 1254 of EPAct requires each electric utility, upon request by any consumer it serves, to interconnect on-site generation facilities to local distribution facilities. Interconnection is necessary for net metering and allows the consumer to "place" the power they generate on the electric grid, which serves other consumers.

An example of net metering and interconnection would be a consumer who has solar panels installed on the roof of their home. This consumer would generate power at their home for their own use. If they generated more power than they needed, net metering would allow them to send any excess power they generate to their electric utility through the interconnection with their utility.

EPAct does not set formal standards. Therefore, each state or utility creates its own standards and rules regarding requirements and fees for net metering and interconnection.

Net metering is available in the majority of the United States, with most states having formal standards for net metering and/or interconnection. To adhere to the requirement of the Joint Resolution to evaluate net metering programs in adjacent states, the Southeastern Association of Regulatory Utility Commissioners (SEARUC) states were chosen. Additionally, the SEARUC states have similar regulatory structures. Also, there are several examples of SEARUC states with successful net metering programs; Florida, Arkansas and Kentucky have been recognized for their efforts. Lastly, the majority of these states share many of the same geographical characteristics. This is important to consider because geography plays an important role in the availability of renewable resources such as solar or wind.

Of those states which are members of SEARUC, seven (Arkansas, Florida, Georgia, Kentucky, Louisiana, North Carolina and South Carolina) have established net metering and/or interconnection standards through legislation or as directed by their Public Service Commission (PSC). The remaining states (Alabama, Mississippi and Tennessee) currently offer net metering and interconnection, although formal standards have not been addressed by state legislation or their PSC.

Alabama

In an October 2007 Order (Docket No. 30066), the Alabama PSC stated they would accept public comments regarding net metering and interconnection. Based on these comments, a workshop was held in April 2008. Due to this meeting and subsequent legislation (HB 234), the net metering requirements for Alabama Power, the only regulated electric utility in the state, were altered and the process was simplified. These rules apply only to the state's investor-owned utilities (IOUs) and do not apply to electric cooperatives or municipal utilities, although they may participate on a voluntary basis.

The requirement that a customer-generator be a qualifying facility (QF) under the Public Utility Regulatory Policies Act of 1978 (PURPA) to be eligible for net metering was eliminated. With the passing of Alabama House Bill 234, the requirement that customers have a $1 million insurance

policy in order to interconnect with the utility has been eliminated. However, a system that is greater than 25 kilowatts (kW) is still required to have liability insurance.

Residential, commercial and industrial customers are eligible for net metering and interconnection. Energy systems must be less than 100 kW in capacity and a bi-directional meter is provided by the utility. The customer is given the option of a standard rate of payment or a time-of-use (TOU) rate.

Any net excess generation (NEG) is carried forward and credited to the customer's energy consumption for the next month's billing cycle based on their selected rate. At the request of the customer or upon termination of service, the company will pay the customer for any remaining NEG. Renewable energy credits (RECs) and enrollment limits are not addressed by the company.

Arkansas

Based on Arkansas legislation (HB 2325) directing the Arkansas PSC to establish net metering rules, the PSC approved final rules for net metering in July 2002 (Docket No. 02-046-R). April 2007 legislation (HB 2334) increased the availability of net metering and interconnection, addressed the carryover of NEG, and clarified the ownership of RECs. These rules apply to the state's IOUs, electric cooperatives, municipal utilities, private power suppliers and energy marketers.

Residential renewable energy systems up to 25 kW in capacity and non-residential systems up to 300 kW in capacity are eligible for net metering. Approved technologies include solar, wind, hydroelectric, geothermal and biomass systems, as well as fuel cells and microturbines that solely use renewable fuels. There is no enrollment limit on net metered systems and insurance requirements are not specified.

Based on the 2007 amendments, any NEG is carried forward and credited to the customer's energy consumption for the next month's billing cycle at their selected rate. Any remaining NEG expires at the end of the annual billing cycle. Prior to these amendments, the NEG expired monthly. Also, the 2007 amendments clarified that net metered customers own the RECs.

Florida

In March 2008, the Florida PSC adopted rules for net metering and interconnection for renewable energy systems up to 2 megawatts (MW) in capacity (Docket No. 070674-EI). The PSC rules apply only to the state's IOUs and do not apply to electric cooperatives or municipal utilities although many participate on a voluntary basis.

Under the PSC rules, eligible fuel sources include hydrogen, biomass, solar, geothermal, wind, ocean energy, waste heat and hydroelectric. Qualified renewable energy generators are categorized into three tiers:

- Tier 1: 10 kW or less

- Tier 2: Larger than 10 kW, but not larger than 100 kW
- Tier 3: Larger than 100 kW, but not larger than 2 MW

Tier 1 applicants are not subject to requirements such as application fees, interconnection studies and liability insurance. Utilities may not charge customer-generators any standby, capacity or metering fees, or other charges above those approved for customers that are not net metered. The utility must, at its own expense, install metering equipment to measure bi-directional energy flow.

An external disconnect switch is not required for inverter-based Tier 1 systems, but a utility may choose to install a disconnect switch at a customer's system at the utility's expense. Utilities are authorized to require customers with Tier 2 and Tier 3 systems to install a disconnect switch at the customer's expense. Utilities must offer customers a standard interconnection agreement for the interconnection of renewable generation systems. Additional insurance is not required for systems that generate 10 kW or less, but is required for those greater than 10 kW.

Any NEG is carried forward and credited to the customer's energy consumption for the next month's billing cycle at their selected rate. At the end of a 12-month billing period, the utility pays the customer for any remaining NEG at an average annual rate based on the IOU's avoided costs (Schedule COG-1). All RECs belong to the customer and can be sold to the utility. There is no stated enrollment limit for all net metered systems.

Georgia

Net metering and interconnection legislation was passed in 2001 in Georgia (SB 93). These rules apply to the state's IOUs, electric cooperatives and municipal utilities. Eligible technologies include solar systems, fuel cells and wind systems up to 10 kW in capacity for residential customers and up to 100 kW for commercial customers. System owners are not required to purchase additional liability insurance and utilities will purchase energy until renewable energy capacity reaches 0.2% of the utility's annual peak demand during the prior year.

Systems may be interconnected on the customer side of the meter and have a bi-directional meter to measure flows in each direction. With this system, NEG is carried forward and credited to the customer's bill for that billing cycle based on their selected rate. This legislation does not address an expiration of NEG or the ownership of RECs.

Kentucky

In April 2008, Kentucky enacted legislation (SB 83) that required utilities to offer net metering to customers that generate electricity with solar, wind, biomass, biogas or hydroelectric systems up to 30 kW in capacity. The enrollment limit is 1.0% of a utility's single-hour peak load during the prior year.

Net metering is available to all customers of IOUs and rural electric cooperatives, except for Tennessee Valley Authority (TVA) utilities. The use of a single, bi-directional meter is required for net metering and any additional meters or upgrades needed to monitor the flow of electricity are installed at the customer's expense. Any NEG is carried forward and credited to the customer's energy consumption for the next month's billing cycle based on their selected rate. These credits do not expire but are non-transferable. The ownership of RECs and insurance requirements are not addressed.

While Kentucky has formal net metering standards, they have not adopted interconnection standards. According to the state's net metering statute, systems and interconnecting equipment must meet all applicable safety and power quality standards.

Louisiana

Based on legislation enacted in 2003 (Act 653), the Louisiana PSC issued rules for net metering and interconnection in November 2005 (Docket No. R-27558). In June 2008, net metering capacity for non-residential systems was expanded (SB 359). Louisiana's rules require IOUs, municipal utilities, electric cooperatives and any electric supplier doing business in the state to offer net metering to customers that generate electricity using solar, wind, hydropower, geothermal or biomass resources. Fuel cells and microturbines that generate electricity completely derived from renewable resources are also eligible. The limit for residential systems is 25 kW in capacity and 300 kW for commercial and agricultural systems. Enrollment limits for the overall system are not addressed.

Utilities must provide a bi-directional meter, but the customer must pay a one-time charge to cover the installation cost. NEG is carried forward and credited to the customer's energy consumption for the next month's billing cycle based on their selected rate and does not expire. For the final month in which the customer takes service from the utility, the utility will pay the customer for the balance of any credit at the utility's avoided cost rate. The ownership of RECs is not addressed because there is no renewable portfolio standard requirement for Louisiana.

Utilities use a PSC-approved standard interconnection agreement and customers are required to pay for interconnection costs. Additional insurance requirements are not addressed.

Mississippi

The Mississippi PSC approved special rules for cogeneration and small power production (Rule 29) in March 1993. This rule applies only to the state's IOUs and does not apply to electric cooperatives or municipal utilities, although they may participate on a voluntary basis. Rule 29 states that a QF under the provisions of PURPA is eligible to interconnect and sell power to their electric utility. No rates are defined and it is left up to the company to determine the treatment of net excess. Additionally, this rule does not address what types of generation are permitted or the treatment of RECs.

There are no specifications on limits on system size, enrollments or customer type. NEG is not addressed by this rule but is addressed by the companies in their tariffs. Both Entergy Mississippi and Mississippi Power state that any NEG will be credited to the customer in the form of a monthly check based on an avoided cost or TOU rate. Rule 29 allows the company to determine what safety equipment is needed and this cost is the responsibility of the customer.

North Carolina

In October 2005, the North Carolina Utilities Commission (NCUC) adopted an Order (Docket No. E-100, Sub 83) requiring the state's IOUs to make net metering available to customers. Approved systems include solar, wind and biomass resources. In July 2006, under the same Docket, the list of approved systems was expanded to include micro-hydro and those systems with battery storage.

The Commission recently ordered the removal of limits on system size for the Interconnection standard (Docket No. E-100, Sub 101). This standard applies to any customer that interconnects with their utility, regardless of the rider they choose. However, if a customer is on a net metering rider, there are still system limits. Under current net metering riders approved by the NCUC, the maximum capacity for residential systems is 20 kW and 100 kW for non-residential systems. The enrollment limit for net metering customers is 0.2% of the utility's North Carolina jurisdictional retail peak load for the prior year. The NCUC is currently evaluating this limit to make a determination as to whether it should remain in place.

NEG is carried forward and credited to the customer's energy consumption for the next month's billing cycle based on TOU rates. NEG is set to zero (annually) at the beginning of each summer season. Any RECs associated with NEG are granted to the utility when the NEG balance is set to zero. Residential customers are required to maintain homeowner's insurance with at least $100,000 in liability coverage and non-residential customers must maintain a $300,000 liability policy. These rules apply only to the state's IOUs and do not apply to electric cooperatives or municipal utilities although many participate on a voluntary basis.

Tennessee

The Tennessee Regulatory Authority (TRA) has not established net metering or interconnection standards for the utilities in the state. The TRA regulates three utility companies in the state of Tennessee. However, the Tennessee Valley Authority (TVA), which serves over 2.6 million Tennessee households, is a federal corporation not regulated by the TRA.

Although there are no formal standards in place, the TVA, Entergy Arkansas and Kentucky Utilities Company offer net metering service to their Tennessee customers. These tariffs and their rules vary greatly.

The TVA allows producers of solar and wind energy to participate in their pilot program, Generation Partners, as long as they do not produce more than 50 kW. Total system participation is

limited to 5 MW. Customers are required to have a bi-directional meter and are credited for all the energy they generate at 15 cents per kWh. The treatment of RECs, as well as the requirement for any liability insurance or additional safety equipment, is not addressed.

Entergy Arkansas states that solar, wind, water and biomass are all eligible resources for those customers who want to participate in net metering (Docket No. 03-00362). Residential customers are limited to 25 kW, while commercial producers can generate up to 100 kW. Limits on total system enrollment are not addressed. Customers do not receive any compensation for NEG and RECs are not addressed. It is the company's discretion if any additional insurance or safety equipment is required by the customer. Entergy Arkansas has a standard interconnection agreement.

Kentucky Utilities Company's Net Metering Service tariff lists eligible fuel sources as solar, wind or hydro and customers are limited to a capacity of 15 kW. Total enrollment limits are not addressed. A bi-directional meter is required and NEG is carried forward and credited to the customer's energy consumption for the next month's billing cycle. The treatment of RECs is not addressed. Customers are required to carry a liability policy of $100,000 and it is the company's discretion if any safety equipment is required.

The following tables summarize the information presented above. The table format allows for quick references and aids in side by side evaluations of the SEARUC member states that have established net metering and/or interconnection standards.

SEARUC MEMBER STATES WITH NET METERING AND INTERCONNECTION PROGRAMS

Alabama

Net Metering	
Limit of System Size	100 kW
Enrollment Limit	Not specified
Treatment of Net Excess	Credited to the next month's billing cycle. Balance paid to customer at their request or upon termination of service
Utilities Involved	Investor-owned utilities (Alabama Power)

Interconnection	
Limit of System Size/Overall Enrollment	100 kW
Standard Interconnection Agreement	Not specified
Additional Insurance Requirement	25 kW or Less: No Greater than 25 kW: Yes
External Disconnect Required	Yes

Arkansas

Net Metering	
Limit of System Size	Residential: 25 kW Commercial: 300 kW
Enrollment Limit	None
Treatment of Net Excess	Credited to the next month's billing cycle. Balance expires at the end of annual billing cycle
Utilities Involved	Investor-owned utilities, electric cooperatives, municipal utilities

Interconnection	
Limit of System Size/Overall Enrollment	Residential: 25 kW Commercial/Agricultural: 300 kW
Standard Interconnection Agreement	Yes
Additional Insurance Requirement	Not Specified
External Disconnect Required	Yes (exception for inverters compliant with IEEE 1547)

Florida

Net Metering	
Limit of System Size	2 MW
Enrollment Limit	Not specified
Treatment of Net Excess	Credited to the next month's billing cycle. Balance purchased by utility at an average annual rate based on avoided costs at end of 12-month billing cycle
Utilities Involved	Investor-owned utilities

Interconnection	
Limit of System Size/Overall Enrollment	2 MW
Standard Interconnection Agreement	Yes
Additional Insurance Requirement	10 kW or less: No Greater than 10 kW: Yes
External Disconnect Required	10 kW or less: No Greater than 10 kW: Yes

Georgia

Net Metering	
Limit of System Size	Residential: 10 kW Commercial: 100 kW
Enrollment Limit	0.2% of utility's annual peak demand during prior year
Treatment of Net Excess	Credited to customer's bill for that billing cycle
Utilities Involved	Investor-owned utilities, electric cooperatives, municipal utilities

Interconnection	
Limit of System Size/Overall Enrollment	Residential: 10 kW Commercial: 100 kW Capped at 0.2% of utility's annual peak demand
Standard Interconnection Agreement	No
Additional Insurance Requirement	No
External Disconnect Required	Not specified

Kentucky

Net Metering	
Limit of System Size	30 kW
Enrollment Limit	1% of utility's single-hour peak load during prior year
Treatment of Net Excess	Credited to the next month's billing cycle indefinitely
Utilities Involved	Investor-owned utilities, rural electric cooperatives

Interconnection
n/a

Louisiana

Net Metering	
Limit of System Size	Residential: 25 kW Commercial/Agricultural: 300 kW
Enrollment Limit	Not specified
Treatment of Net Excess	Credited to the next month's billing cycle indefinitely. Balance purchased by utility at avoided cost upon termination of service
Utilities Involved	Investor-owned utilities, electric cooperatives, municipal utilities

Interconnection	
Limit of System Size/Overall Enrollment	Residential: 25 kW Non-Residential: 300 kW
Standard Interconnection Agreement	Yes
Additional Insurance Requirement	Not Specified
External Disconnect Required	Yes

Mississippi

Net Metering	
Limit of System Size	Not specified
Enrollment Limit	Not specified
Treatment of Net Excess	Credited to customer in monthly check
Utilities Involved	Investor-owned utilities

Interconnection	
Limit of System Size/Overall Enrollment	Not specified
Standard Interconnection Agreement	No
Additional Insurance Requirement	Determined by company
External Disconnect Required	Not specified

North Carolina

Net Metering	
Limit of System Size	Residential: 20 kW Non-Residential: 100 kW
Enrollment Limit	0.2% of utility's North Carolina retail peak load during prior year
Treatment of Net Excess	Credited to customer's next bill based on TOU rates. Balance set to zero (annually) at beginning of summer season
Utilities Involved	Investor-owned utilities

Interconnection	
Limit of System Size/Overall Enrollment	No size limit
Standard Interconnection Agreement	Yes
Additional Insurance Requirement	No
External Disconnect Required	Yes

Tennessee

Net Metering	
Limit of System Size	No standard established; Varies by company
Enrollment Limit	No standard established; Varies by company
Treatment of Net Excess	No standard established; Varies by company
Utilities Involved	Tennessee Valley Authority, Entergy Arkansas and Kentucky Utilities Company

Interconnection	
Limit of System Size/Overall Enrollment	No standard established; Varies by company
Standard Interconnection Agreement	No
Additional Insurance Requirement	No standard established; Determined by company
External Disconnect Required	Determined by company

Status of Net Metering and Interconnection in South Carolina

South Carolina has 46 electric utilities, ranging from large investor-owned utilities operating in multiple states, such as Duke Energy Carolinas, to very small municipal systems such as the City of Due West, serving slightly more than 300 customers. For a complete listing of electric utilities, see Appendix F.

Type of Electric Utility	*Number*
Investor-Owned	4
State Owned	1
Cooperatives	20
Municipals	21

There are four IOUs in South Carolina (Duke Energy Carolinas, Progress Energy Carolinas, South Carolina Electric & Gas Company [SCE&G] and Lockhart Power) that are governed by a board of directors operating at the direction of investors and regulated by the state's PSC.

Lockhart Power is the smallest of the IOUs which provides power to portions of five upstate counties. It serves approximately 6,500 direct retail customers and 7,000 indirect retail customers. Lockhart Power's annual retail sales do not exceed 500 million kWhs and as such they are exempt. (*See* Section 102 of the Public Utility Regulatory Policies Act of 1978 (26 U.S.C.A. § 2612 (a) (1978)), and Appendix E, the DOE 2008 list of those electric utilities subject to Title 1 of PURPA). Therefore, Lockhart Power is not included in the IOU category for the purpose of this report.

The South Carolina Public Service Authority, more commonly referred to as Santee Cooper, is similar to the IOUs in that it serves a large territory and generates its own power. It is a state entity governed by a board appointed by the Governor, with advice and consent of the Senate. For the purposes of this report, references to Santee Cooper are specific to its retail operations.

Each electric distribution cooperative is governed by an independent board of directors. The distribution cooperatives are primarily supported by Central Electric Power Cooperative. Central Electric Power Cooperative provides wholesale power to the distribution cooperatives and provides transmission service between the bulk transmission systems and distribution delivery points. Most power received by the cooperatives is supplied by Santee Cooper. Municipal systems are governed by boards or by the government of the municipality.

"Green Power" Programs

Consumers who are not able to install their own renewable generation systems but who wish to support renewable energy can do so by contributing to one of two "green power" programs in the state. Customers of Santee Cooper and the electric cooperatives' "Green Power Tags" can commit to regular purchases of green power generated from renewable sources by the utility. Customers of the IOUs can make contributions to the non-profit Palmetto Clean Energy (PaCE) which uses the funds to purchase renewable power generated in S.C. and add it to the grid.

Although net metering and green power programs have often been linked in the public mind, they are two separate programs. A generator wishing to sell power to PaCE will sign an agreement to sell all power generated by the renewable energy system to a utility, under a purchase power agreement, whereas a net metering customer will bank any excess generation. A customer will have the option in choosing between net metering or selling power to PaCE.

Net Metering and Interconnection

Investor-Owned Utilities

In December 2005, the South Carolina Office of Regulatory Staff (ORS) petitioned the PSC to establish a docket to address net metering (Docket No. 2005-385-E).

In May 2007, the PSC held its first net metering hearing in which it decided to implement net metering standards. However, since the IOUs presented only one net metering option, a Time-of-Use Demand tariff, the PSC stated;

> *"Out of our concern that net metering might be unduly constrained by the absence of a non-demand sensitive rate, we instructed each utility to explore the feasibility of an alternative tariff which would give net metering customers the option of purchasing their power on a so called "flat rate" plan."*

In February 2008, the PSC held a meeting to address concerns that the proposed tariffs were not easily understandable by the public. The IOUs agreed to devise summaries that would make their net metering rates easier to understand. In May 2008, the PSC held a second hearing to allow certain intervenors to be heard on the proposed tariffs. As a result of the above, each utility offers two choices for net metering, a TOU rate or a flat rate.

The PSC issued Order No. 2008-416 in June 2008, which noted that:

> *"We have been gratified by the considerable public input on net metering; it tells us that the public is starting to become aware of the challenges that are posed to this state by simultaneous rapid population growth and increasing energy costs. We also recognize the significant contributions of the pro se intervenors in this docket, who obviously worked hard to learn the Commission's procedures and follow rules that may not have been familiar to them. We appreciate their effort and commitment, and believe that they have made a valuable contribution to this proceeding."*

The Order directed the utilities to:

1. Make net metering plans available to their customers no later than July 1, 2008.
2. Have trained and knowledgeable customer service personnel available to assist customers by July 1, 2008.
3. Make explanations of their net metering programs available on their websites.

This Order also directed the Commission staff to schedule a hearing to review the net metering programs after 12 months.

The approved systems for net metering include solar, wind, biomass and micro-hydro resources. The maximum capacity for residential systems is 20 kW and 100 kW for non-residential systems. The limit is 0.2% of the IOU's South Carolina jurisdictional retail peak load for the prior calendar year. NEG is carried forward and credited to the customer's energy consumption for the next month's billing cycle based on avoided cost or TOU rates. NEG is set to zero (annually) at the beginning of each summer season. Residential customers are required to maintain homeowner's insurance with at least $100,000 in liability coverage and non-residential customers must maintain a $300,000 liability policy. The tariffs do not address ownership of RECs. The Commission states that RECs are not currently being traded, and therefore have no applicability at this time. Therefore, ownership of RECs is not addressed, but will be reevaluated when there is a viable market in South Carolina. The Commission stated that it is up to the parties to raise the issue at that time. These rules apply only to the state's IOUs.

In December 2005, the ORS also petitioned the PSC to establish a docket to address interconnection (Docket No. 2005-387-E). In December 2006, the PSC issued Order No. 2006-772 adopting the Model Interconnection Standard filed jointly by ORS, Duke Energy Carolinas, Progress Energy Carolinas and SCE&G.

As stated in Docket No. 2005-387-E – Order No. 2006-772 of the Public Service Commission of South Carolina:

> *"Section 1254 of the EPAct requires each electric utility to make interconnection service available, upon request, to any electric consumer that the electric utility serves. Interconnection services are to be based on the standards developed by the Institute of Electrical and Electronics Engineers (IEEE), as may be amended from time to time. Specifically, the EPAct references IEEE Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems. In addition, Section 1254 of the EPAct requires that agreements and procedures be established such that the services offered promote the current best practices of interconnection for distributed generation, including but not limited to practices stipulated in model codes adopted by associations of state regulatory agencies."*

On December 19, 2006, the PSC adopted the model interconnection code, stating:

> *"We have considered this matter and believe that the Model Interconnection Standard should be adopted as filed. Such a standard is consistent with the purposes of Section 1254 of the EPAct and provides specific standards for parallel interconnection of single phase small generation systems rated at 20 kW or less for residential customers and 100 kW or less for nonresidential customers. Further, there is no opposition to the Standard's adoption. Accordingly, the Model Interconnection Standard is hereby adopted as filed."*

State Owned Utility

Santee Cooper, the state-owned utility, is not regulated by the PSC, but is subject to Title 1 of PURPA (See Appendix E). Santee Cooper held hearings on net metering and interconnection and has adopted policies and procedures very similar to those of the IOUs. Santee Cooper has offered a net billing pilot program since October 2007 for residential customers. The approved systems include solar, wind, biomass and micro-hydro resources. The renewable energy generator (REG) system capacity for residential customers cannot exceed the estimated maximum monthly kW demand of the residence or 20 kW, whichever is less. Since this is a pilot program, no overall limits were set. NEG is carried forward and credited to the customer's energy consumption for the next month's billing cycle based on TOU rates. Credits of $50 or more are provided to the customer in the form of a check. RECs are owned by Santee Cooper.

Limits on interconnection are 20 kW for residential customers and 100 kW for non-residential customers. Although non-residential customers can interconnect, currently a non-residential net metering tariff does not exist. Santee Cooper will discuss purchasing the output of non-residential customer owned generation as requested. Residential customers are required to maintain homeowner's insurance with at least $100,000 in liability coverage and non-residential customers must maintain a $300,000 liability policy.

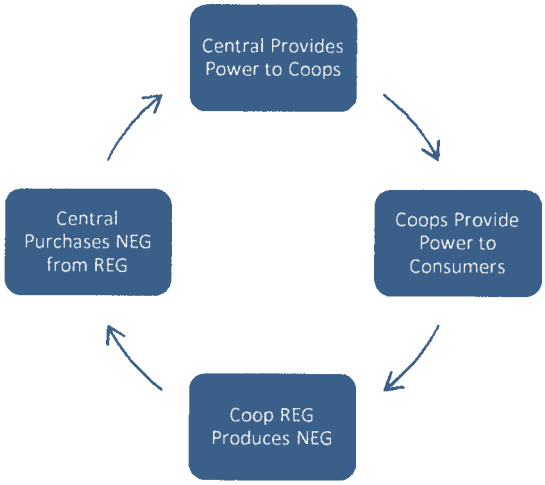
Electric Cooperatives

Thirteen of the twenty electric distribution cooperatives in South Carolina have annual retail sales greater than 500 million kWh and are subject to Title 1 of PURPA (See Appendix E). The net metering and interconnection pilot programs offered by the distribution cooperatives generally follow guidelines developed by Central Electric Power Cooperative (Central).

The eligible renewable generation systems include solar, wind, biomass or micro-hydro resources and other renewable generation sources specifically approved by an electric cooperative. The REG system capacity for residential customers cannot exceed the estimated maximum monthly kW demand of the residence or 50 kW, whichever is less. Since this is a pilot program, the enrollment limitations are at the Cooperative's discretion. NEG is purchased by Central based on TOU rates. RECs are owned by Central.

Limits on interconnection are 50 kW for residential customers. Although non-residential customers can interconnect, they are not eligible to participate in net metering. Residential customers are required to maintain homeowner's insurance with at least $100,000 in liability coverage and non-residential customers must maintain a $300,000 liability policy.

Because of the contractual obligations between the cooperatives and Central, the cooperative's net metering program is based on a three-pronged agreement between Central, the cooperative and the REG. The sequence of TOU net metering tariffs is reflected in the following cycle:



This unique relationship is necessary because cooperatives are contractually obligated to purchase all of their power from Central. Therefore, cooperatives cannot purchase NEG from REGs.

Municipal Electric Utilities

Two of the twenty-one municipal utilities in South Carolina have annual retail sales greater than 500 million kWh and studied the feasibility of implementing a net metering and interconnection program (See Appendix E). These electric systems are the City of Orangeburg and the City of Rock Hill. Both cities completed the EPAct Consideration Report and scheduled a public hearing on the issue. Neither city received any written or public comments during the public hearing. Due to the limited interest, these cities did not establish net metering or interconnection standards. However, both cities will continue to offer programs which allow a variation of net metering for commercial users.

The following tables summarize the information presented above. The table format allows for quick references and aids in side by side evaluations of the South Carolina utilities that have established net metering and/or interconnection standards.

SOUTH CAROLINA NET METERING AND INTERCONNECTION PROGRAMS

Investor-Owned Utilities

Net Metering	
Limit on System Size	Residential: 20 kW Non-Residential: 100 kW
Enrollment Limit	0.2% of utility's South Carolina retail peak load during prior year
Treatment of Net Excess	Credited to customer's next bill based on avoided cost or time-of-use rates. Balance set to zero (annually) at beginning of summer season
Utilities Involved	Duke Energy Carolinas, Progress Energy Carolinas and SCE&G

Interconnection	
Limit of System Size/ Overall Enrollment	Residential: 20 kW Non-Residential: 100 kW
Standard Interconnection Agreement	Yes
Insurance Requirement	Residential: Homeowner's policy with $100,000 Non-Residential: $300,000
External Disconnect Required	Yes

Santee Cooper

Net Metering	
Limit on System Size	Residential: 20 kW
Enrollment Limit	No limits set
Treatment of Net Excess	Credited to the customer's next bill based on time-of-use rates. Credits ≤ $50 paid by check.
Utilities Involved	Santee Cooper

Interconnection	
Limit of System Size/ Overall Enrollment	Residential: 20 kW Non-Residential: 100 kW
Standard Interconnection Agreement	Yes
Insurance Requirement	Residential: Homeowner's policy with $100,000 Non-Residential: $300,000
External Disconnect Required	Yes

Cooperatives

Net Metering	
Limit on System Size	Residential: 50 kW Non-Residential: n/a
Enrollment Limit	At the cooperative's discretion
Treatment of Net Excess	Customers sell all power generated to Central Electric Cooperative
Utilities Involved	Distribution cooperatives contracted with Central Electric Cooperative

Interconnection	
Limit of System Size/ Overall Enrollment	Residential: 50 kW Non-Residential: 100 kW
Standard Interconnection Agreement	Yes
Insurance Requirement	Residential: Homeowner's policy with $100,000 Non-Residential: $300,000
External Disconnect Required	Yes

Net Metering Billing Examples

The following tables provide an illustration of how net metering bills are calculated and how NEG is credited. These examples are for illustration only; they may not represent probable scenarios; and for ease and simplicity, round numbers are used. The examples show time-of-use demand (TOUD) rate and standard residential ("flat rate") rate billing scenarios currently offered by the major IOUs in South Carolina (i.e., Duke Energy Carolinas, Progress Energy Carolinas, and South Carolina Electric & Gas Company). Duke Energy Carolinas and Progress Energy Carolinas provide specific net metering billing examples in Appendix G and Appendix H, respectively.

Tables 1 and 2 show examples of how credits would be applied to a customer's bill using a 2 kW photovoltaic (PV) system. Given an average monthly consumer energy requirement of 1,000 kWh and the smaller size of the PV system, the examples show that no NEG is produced. Tables 1 and 2 are intended to show a billing calculation of a smaller PV system that may be typically installed by residential customers. That is, all energy generated from a residential REG will likely be applied to offset electricity needs from the utility to ultimately reduce the consumer's monthly bill.

Tables 3 and 4 show examples of how credits would be applied to a customer's bill using a larger 10 kW PV system. Given an average monthly consumer energy requirement of 1,000 kWh, Table 3 shows a TOUD rate scenario where the consumer's PV system does not produce any NEG. That is, all energy generated from the REG is applied to offset electricity needs from the utility to ultimately reduce the consumer's monthly bill. Table 4 shows a similar system which produces 200 kWh of NEG. The NEG credit is based upon TOUD rates by applying excess on-peak kWh against on-peak charges and excess off-peak kWh against off-peak charges, and by applying any remaining on-peak kWh against any remaining off-peak charges.

Tables 5 and 6 also show examples of how credits would be applied to a customer's bill using a larger 10 kW PV system. Given an average monthly consumer energy requirement of 1,000 kWh, Table 5 shows a standard rate scenario where the consumer's PV system does not produce any NEG. That is, all energy generated from the REG is applied to offset electricity needs from the utility to ultimately reduce the consumer's monthly bill. Table 6 shows a similar system which produces 200 kWh of NEG. The NEG credit is based upon the utility's avoided cost rates and applied according to the on-peak and off-peak hours the REG supplied energy to the utility.

TABLE 1

Net Metering Billing Example for Time-of-Use Demand Rate (2 kW System - No Excess)

(Monthly customer energy requirements are 1000 kWh)

Standard Residential Rate (SRR) - No PV System

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	0	800	$80.00	$80.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	0	200	$22.00	$19.00
							$108.50	$105.50
					Average Monthly Bill =	**$106.50**		

Time-of-Use Demand (TOUD) Rate - 2 kW PV System

(Monthly customer energy requirements are 1000 kWh, peak demand of 7 kW, reduced to 5 kW with 2 kW PV system, 50% of usage on-peak, approx. 20% Capacity Factor and PV system generates 250 kWh).

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
TOUD	Basic Customer Charge	$10.00	$10.00				$10.00	$10.00
TOUD	On-peak Demand Charge	$10.00	$6.00	7	-2	5	$50.00	$30.00
TOUD	On-peak Energy Charge*	$0.07000	$0.07000	500	125	375	$26.25	$26.25
TOUD	Off-peak Energy Charge	$0.05000	$0.05000	500	125	375	$18.75	$18.75
							$105.00	$85.00
					Average Monthly Bill =	**$91.67**		
					Monthly Savings =	**$14.83**		
					% Savings =	**14%**		
					¢/kWh Saved =	**5.93**		

*NOTES: Assumes 50% of usage is consumed on-peak

TABLE 2

Net Metering Billing Example for Standard Residential Rate (2 kW System - No Excess)

(Monthly customer energy requirements are 1000 kWh)

Standard Residential Rate (SRR) - No PV System

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	0	800	$80.00	$80.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	0	200	$22.00	$19.00
							$108.50	$105.50
					Average Monthly Bill =	**$106.50**		

Standard Residential Rate and Purchase Power Rate Rider (PPRR) - 2 kW System

(Monthly customer energy requirements are 1000 kWh and 2 kW PV system at approx. 20% Capacity Factor generates 250 kWh).

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	50	750	$75.00	$75.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	200	0	$0.00	$0.00
PPRR	Metering Facilities Charge	$5.00	$5.00				$5.00	$5.00
							$86.50	$86.50
					Average Monthly Bill =	**$86.50**		
					Monthly Savings =	**$20.00**		
					% Savings =	**19%**		
					¢/kWh Saved =	**8.00**		

TABLE 3

Net Metering Billing Example for Time-of-Use Demand Rate (10 kW System - No Excess)

(Monthly customer energy requirements are 1000 kWh)

Standard Residential Rate (SRR) - No PV System

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	0	800	$80.00	$80.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	0	200	$22.00	$19.00
							$108.50	$105.50

Average Monthly Bill = $106.50

Time-of-Use Demand (TOUD) Rate - 10 kW PV System

(Monthly customer energy requirements are 1000 kWh, peak demand of 10 kW, reduced to 5 kW with 10 kW PV system, 50% of usage on-peak, approx. 15% Capacity Factor and PV system generates 1000 kWh)

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
TOUD	Basic Customer Charge	$10.00	$10.00				$10.00	$10.00
TOUD	On-peak Demand Charge	$10.00	$6.00	10	-5	5	$50.00	$30.00
TOUD	On-peak Energy Charge*	$0.07000	$0.07000	500	500	0	$0.00	$0.00
TOUD	Off-peak Energy Charge	$0.05000	$0.05000	500	500	0	$0.00	$0.00
							$60.00	$40.00

*NOTES: Assumes 50% of usage is consumed on-peak

Average Monthly Bill = $46.67 (Minimum Bill)

Monthly Savings = $59.83

% Savings = 56%

¢/kWh Savings = 5.98

TABLE 4
Net Metering Billing Example for Time-of-Use Demand Rate (10 kW System - Excess Credit)

(Monthly customer energy requirements are 1000 kWh)

Standard Residential Rate (SRR) - No PV System

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	0	800	$80.00	$80.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	0	200	$22.00	$19.00
							$108.50	$105.50
					Average Monthly Bill =	**$106.50**		

Time-of-Use Demand (TOUD) Rate - 10 kW PV System

(Monthly customer energy requirements are 1000 kWh, peak demand of 10 kW, reduced to 5 kW with 10 kW PV system, 50% of usage on-peak, approx. 20% Capacity Factor and PV system generates 1200 kWh)

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
TOUD	Basic Customer Charge	$10.00	$10.00				$10.00	$10.00
TOUD	On-peak Demand Charge	$10.00	$6.00	10	-5	5	$50.00	$30.00
TOUD	On-peak Energy Charge*	$0.07000	$0.07000	500	500	0	$0.00	$0.00
TOUD	Off-peak Energy Charge	$0.05000	$0.05000	500	500	0	$0.00	$0.00
					200	**(Credit)**	$60.00	$40.00
					1,200			
					Average Monthly Bill =	**$46.67**	**(Minimum Bill)**	
					Savings =	**$59.83**		
					% Savings =	**56%**		
					¢/kWh Savings =	**5.98**		

200 kWhs are carried forward as a credit to next month's bill

Rate	Charges	Summer	NonSummer	Credit on Next Month Bill (200 kWhs)	Monthly Bill	
TOUD	On-peak Energy Charge*	$0.07000	$0.07000	100	$7.00	$7.00
TOUD	Off-peak Energy Charge	$0.05000	$0.05000	100	$5.00	$5.00
					$12.00	$12.00

*NOTE: Assumes 50% of usage is consumed on-peak

Credit = $12.00

TABLE 5

Net Metering Billing Example for Standard Residential Rate (10 kW System – No Excess)

(Monthly customer energy requirements are 1000 kWh)

Standard Residential Rate (SRR) - No PV System

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	0	800	$80.00	$80.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	0	200	$22.00	$19.00
							$108.50	$105.50

Average Monthly Bill = $106.50

Standard Residential Rate and Purchase Power Rate Rider (PPRR) - 10 kW PV System

(Monthly customer energy requirements are 1000 kWh and 10 kW PV system at 15% Capacity Factor generates 1000 kWh)

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	800	0	$0.00	$0.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	200	0	$0.00	$0.00
PPRR	Metering Facilities Charge	$5.00	$5.00				$5.00	$5.00
							$11.50	$11.50

Average Monthly Bill = $11.50 **(Minimum Bill)**

Monthly Savings = $95.00

% Savings = 89%

¢/kWh Savings = 9.5

TABLE 6 - Net Metering Billing Example for Standard Residential Rate (10 kW System - Excess Credit)

(Monthly customer energy requirements are 1000 kWh)

Standard Residential Rate (SRR) - No PV System

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	0	800	$80.00	$80.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	0	200	$22.00	$19.00
							$108.50	$105.50
					Average Monthly Bill =	**$106.50**		

Standard Residential Rate and Purchase Power Rate Rider (PPRR) - 10 kW PV System

(Monthly customer energy requirements are 1000 kWh and 10 kW PV system @ 20% Capacity Factor generates 1200 kWh)

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	800	0	$0.00	$0.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	200	0	$0.00	$0.00
					200	**(Credit)**		
					1,200			
PPRR	Metering Facilities Charge	$5.00	$5.00				$5.00	$5.00
							$11.50	$11.50
					Average Monthly Bill =	**$11.50**	**(Minimum Bill)**	
					Savings =	**$95.00**		
					% Savings =	**89%**		
					¢/kWh Savings =	**9.50**		

200 kWhs are carried forward as a credit to next month's bill

Rate	Charges			Credit on Next Month's Bill (200 kWh)	Monthly Bill	
PPRR	On-peak Energy Charge	$0.08000	$0.06500	100	$8.00	$6.50
PPRR	Off-peak Energy Charge	$0.06000	$0.05500	100	$6.00	$5.50
					$14.00	$12.00

**Credit based on 50% on peak and 50% off peak generation (200/2=100 kWh)*

CREDIT = $12.67

Summary

Part I of the report provides a general discussion about net metering to include its regulatory foundation, programs in adjacent states and the current status of net metering in South Carolina. The origin of the regulation that encouraged the development of renewable resources can be found in PURPA. In 2005, PURPA was amended by EPAct to further encourage renewable energy generation by specifically addressing net metering and interconnection standards. Part I also summarizes existing net metering programs of SEARUC member states. The corresponding tables provide a side by side evaluation of the existing programs and help to show the similarities and differences of net metering programs in adjacent states. Part I also provides a detailed assessment of the nature and status of net metering and interconnection programs in South Carolina.

South Carolina has been very active in developing net metering programs. Net metering and interconnection standards jointly filed by the major IOUs and supported by ORS have been approved. Santee Cooper has implemented a net metering pilot program. The distribution cooperatives in conjunction with Central have also implemented a pilot program. Also, the municipalities continue to engage in ongoing discussions about net metering and how it may benefit their customers.

As of August 2008, there were a total of twelve net metering customers in the state. However, net metering was not available in the service areas of the IOUs until mid-year 2008. This report is intended to further encourage the development of net metering in South Carolina by evaluating current programs in this state and neighboring states and providing suggestions to enhance South Carolina programs. Part II of the report offers specific recommendations for potential legislative and regulatory actions designed to create a more uniform, accessible and fair approach to net metering.

Details of Recommendations

Some proponents of renewable energy have expressed concern that current utility policies for net metering are difficult to interpret, uneven across utilities and discourage consumers hoping to partially offset expensive equipment purchases.

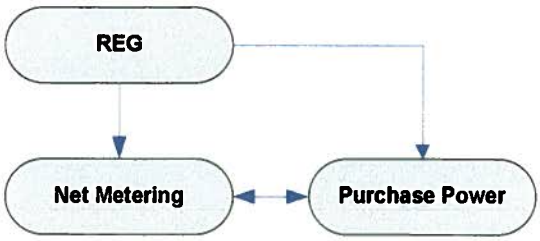
While net metering in South Carolina is in its infancy, and while the number of affected consumers is small - a total of twelve net metering customers as of August 2008 - there is potential to make adjustments to maximize the use of renewable energy in South Carolina.

After careful consideration of current policies and practices in South Carolina and neighboring southeastern states, as well as comments provided by a dedicated group of volunteer advisors, the ORS and the SC Energy Office have developed recommendations which provide the foundation and framework for potential legislative and regulatory action. In accordance with the Joint Resolution, the recommendations, herein, apply only to the IOUs and Santee Cooper. However, the remaining utilities which were required to consider net metering in accordance with EPAct 2005 should use the recommendations as a resource as they continue to develop their net metering programs. The recommendations are intended to enhance the net metering programs and interconnection standards currently offered by all South Carolina utilities; however, the recommendations specifically build on the net metering and interconnection standards currently established by the IOUs.

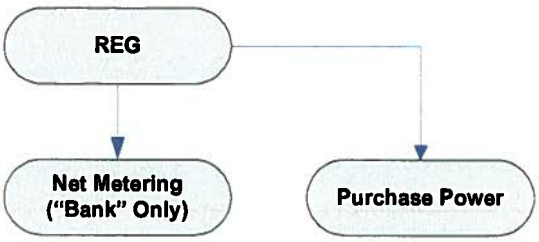
The overall intent of the recommendations is to help establish net metering programs that are more "user friendly." There were overwhelming comments from the volunteer advisors on the difficulty in understanding TOUD tariffs, the difference between multiple net metering options offered by the utilities, and the three pronged purchase power relationship of the net metering programs offered by the cooperatives.

To simplify the net metering process, the first step must be to separate net metering programs from purchase power programs. Currently, these two programs are closely intertwined, which leads to much of the confusion. Whether it's a direct purchase of power by the host utility or an indirect transaction with a "green power" purchasing program like PaCE, it is imperative to clearly disconnect these types of purchase power programs from net metering programs. It is therefore recommended that South Carolina net metering programs exclusively reflect a "banking" of excess generation that only credits a customer's monthly bill. That is, net metering programs should not incorporate, in any manner, the purchase of excess generation from a REG. Utility purchases of excess generation must be addressed separately through purchase power contractual agreements with the REG and should not be considered a part of net metering. The diagrams below illustrate the current structure of net metering programs in the state and the structure of net metering programs recommended herein.

Current Structure



Recommended Structure



This approach will greatly simplify the process by reducing the multiple options currently offered by the utilities as net metering and by focusing on establishing a "pure" net metering program. A REG will only be allowed to "bank" its excess generation. This excess generation will then be applied as a credit to a consumer's monthly bill to offset usage. The following is an example of "banking" excess generation:

Month 1:	
Energy Used	1,000 kWh
Renewable Energy Generated	200 kWh
Net Energy Billed	**800 kWh**
Month 2:	
Energy Used	1,000 kWh
Renewable Energy Generated	1,200 kWh
Net Energy Billed	**0 kWh**
Bank (Deposit)	200 kWh
Month 3:	
Energy Used	1,000 kWh
Renewable Energy Generated	0 kWh
Bank (Withdrawal)	200 kWh
Net Energy Billed	**800 kWh**

Recommendations - Net Metering:

1. *Standardize net metering program structure across utilities:*

   Establishing a standardized net metering program based on a "banking" of excess generation which credits a customer's monthly bill would greatly simplify the net metering processes by providing consistency across utilities. This approach would encourage the development of renewable resources in the state by offering a single set of "rules" for all stakeholders to include utilities, installers and REGs, as well as regulatory agencies.

2. *For residential customers, modify the IOU flat rate option to reflect 1:1 standard retail rates for excess energy credits:*

   The flat rate option currently offered by the IOUs allows REGs to offset their usages at the standard retail rate but provides credits for any NEG based on avoided cost rates. This recommendation would replace the avoided cost rate credit with a standard retail rate credit. The affected utilities should offer a flat rate option which offsets usage and provides credits for NEG based on the standard residential retail rate. Table 7 shows an example of how this recommended rate modification would be calculated. See Table 6 to reference the IOU's current flat rate option. The utilities should offer only one tariff for the residential flat rate option. The structure of the tariff should be consistent across utilities.

TABLE 7 - Billing Example for Recommended Residential Net Metering Rate (10 kW System - Excess Credit)

(Monthly customer energy requirements are 1000 kWh)

Standard Residential Rate (SRR) - No PV System

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
SRR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
SRR	First 800 kWh	$0.10000	$0.10000	800	0	800	$80.00	$80.00
SRR	Over 800 kWh	$0.11000	$0.09500	200	0	200	$22.00	$19.00
							$108.50	$105.50
					Average Monthly Bill =	**$106.50**		

Residential Net Metering Rate (RNMR) - 10 kW PV System

(Monthly customer energy requirements are 1000 kWh and 10 kW PV system @ 20% Capacity Factor generates 1200 kWh)

				Customer Usage (kWh)			Monthly Bill	
Rate	Charges	Summer	NonSummer	Normal	Generated	Net Billed	Summer	NonSummer
RNMR	Basic Customer Charge	$6.50	$6.50				$6.50	$6.50
RNMR	First 800 kWh	$0.10000	$0.10000	800	800	0	$0.00	$0.00
RNMR	Over 800 kWh	$0.11000	$0.09500	200	200	0	$0.00	$0.00
					200	**(Credit)**		
					1,200			
RNMR	Metering Facilities Charge	$5.00	$5.00				$5.00	$5.00
							$11.50	$11.50
					Average Monthly Bill =	**$11.50**	**(Minimum Bill)**	
					Savings =	**$95.00**		
					% Savings =	**89%**		
					¢/kWh Savings =	**9.50**		

200 kWhs are carried forward as a credit to next month's bill

				Credit on Next Month's Bill (200 kWh)	Monthly Bill	
Rate	Charges					
RNMR	First 800 kWh	$0.10000	$0.10000	0	$0.00	$0.00
RNMR	Over 800 kWh	$0.11000	$0.09500	200	$22.00	$19.00
					$22.00	$19.00
				CREDIT = **$20.00**		

3. *Acknowledge that recommendation number 2 may create cross-subsidization and impact a utility's cost of service, allow utilities to recover these costs, subject to measurement and verification of these costs:*

   Assuming renewable generation benefits all users, the costs incurred by the utilities due to Recommendation 2 should be recovered from all customer classes on a system-wide basis and not impact shareholders. Utilities should be allowed to establish a mechanism to recover such costs via an annual rider or other mechanisms more appropriate for a utility given its governing structure.

4. *Eliminate stand-by charges for residential customers:*

   Each utility has an obligation to provide electrical service to all of its customers. Therefore, stand-by charges are intended to recover utility costs for maintaining additional facilities that provide electrical service to customers with large on-site self generation in the event their on-site self generation is forced off-line. However, given the smaller size of residential renewable generation systems and the overall limitation on participation in net metering programs (0.2% of SC jurisdictional peak load for the prior year), the utilities should be fully capable of providing electrical support to these smaller systems, if needed, without additional facilities and without measurable impact on the system.

5. *Allow renewable energy generator to retain ownership of Renewable Energy Credits (RECs):*

   In August 2007, the PSC ruled that RECs would be addressed once a viable market exists. Since then, the market for RECs has been slowly developing and there is open interest in the ownership of RECs by renewable generators. Renewable energy generators should retain ownership of RECs associated with energy generated and used to offset usage. However, at the beginning of each summer season, any RECs associated with NEG are granted to the utility when the NEG balance is set to zero.

6. *Require annual reporting to SC Office of Regulatory Staff and SC Energy Office of the number of net metering customers by renewable energy generator type, in order to allow for continuing assessment of net metering programs:*

   Each utility should provide an annual report summarizing its net metering activity to the SC Office of Regulatory Staff and the SC Energy Office. The annual report should coincide with the annual demand-side management reports to the State Energy Office, as currently required by state law.

7. *Formally revisit the net metering process within 4 years:*

   The state should formally assess the effectiveness of net metering policies within 4 years to ensure that net metering programs continue to appropriately reflect state energy policy.

Recommendations – Interconnection Standards

1. *Standardize interconnection standards across utilities:*

   Establishing statewide and standardized interconnection standards (to include forms) helps to simplify connecting renewable generators to the grid by providing consistency across utilities. This approach would encourage the development of renewable resources in the state by offering a single set of "rules" for all stakeholders to include utilities, installers, REGs, as well as regulatory agencies.

2. *Adopt FERC 3-Tier Interconnection Standards as revised by North Carolina Utilities Commission:*

   North Carolina recently approved Revised Interconnection Standards based on FERC's 3-Tier Interconnection Standards (NCUC Docket No. E-100, Sub 101; 06/09/2008). Two of the major IOUs in SC have implemented the NC Revised Standards. The current SC Interconnection Standards are based on the NC Interconnection Standards prior to the revisions. Adopting the FERC 3-Tier Interconnection Standards as revised by NC Utilities Commission would foster the consistency with utilities in a neighboring state that serve SC customers as well as establish Interconnection Standards recommended by FERC.

   The revised NC Interconnection Standards go beyond net metering customers and also allow for interconnection of larger (greater than 2 MW) co-generation systems that do not participate in net metering but sell power directly to the utility. However, to ensure net metering customers have no measurable impact to a utility's system, SC Interconnection Standards should continue to coincide with the limits for net metering customers of 20 kW for residential and 100 kW for non-residential. Also the overall participation limit of 0.2% of a utility's South Carolina jurisdictional peak load for the prior calendar year should remain in effect. These limitations provide the utilities an opportunity to evaluate the impact of distributed generation on their systems.

   In the interest of safety, SC Interconnection Standards should give utilities the discretion to determine whether to require an external disconnect switch.

3. *Require annual reporting to the SC Office of Regulatory Staff and SC Energy Office of the number of requests and successful interconnections by renewable energy generator type, in order to allow for continuing assessment of SC Interconnection Standards:*

   Each utility should provide an annual report summarizing its interconnection activity to the SC Office of Regulatory Staff and the SC Energy Office. The annual report should coincide with the annual demand-side management reports to the State Energy Office, as currently required by state law.

4. *Formally revisit the SC Interconnection Standards within 4 years:*

   The state should formally assess the effectiveness of interconnection standards within 4 years to ensure that interconnection standards continue to appropriately reflect state energy policy.

APPENDIX A

South Carolina General Assembly
117th Session, 2007-2008

A404, R247, H3395

STATUS INFORMATION

Joint Resolution
Sponsors: Reps. Funderburk, Toole, Stavrinakis and Sandifer
Document Path: l:\council\bills\gjk\20106sd07.doc
Companion/Similar bill(s): 684

Introduced in the House on January 31, 2007
Introduced in the Senate on March 5, 2008
Last Amended on March 4, 2008
Passed by the General Assembly on May 6, 2008
Governor's Action: May 13, 2008, Signed

Summary: Energy Office

HISTORY OF LEGISLATIVE ACTIONS

Date	Body	Action Description with journal page number
1/31/2007	House	Introduced and read first time HJ-14
1/31/2007	House	Referred to Committee on **Labor, Commerce and Industry** HJ-14
2/14/2008	House	Member(s) request name added as sponsor: Toole
2/28/2008	House	Committee report: Favorable with amendment **Labor, Commerce and Industry** HJ-1
3/4/2008	House	Member(s) request name added as sponsor: Stavrinakis, Sandifer
3/4/2008	House	Amended HJ-65
3/4/2008	House	Read second time HJ-66
3/5/2008	House	Read third time and sent to Senate HJ-13
3/5/2008	Senate	Introduced and read first time SJ-6
3/5/2008	Senate	Referred to Committee on **Judiciary** SJ-6
3/17/2008	Senate	Referred to Subcommittee: Rankin (ch), Ford, Scott, Campbell
4/30/2008	Senate	Committee report: Favorable **Judiciary** SJ-19
5/1/2008	Senate	Read second time SJ-33
5/6/2008	Senate	Read third time and enrolled SJ-7
5/8/2008		Ratified R 247
5/13/2008		Signed By Governor
5/19/2008		Copies available
5/19/2008		Effective date 05/13/08
8/6/2008		Act No. 404

View the latest legislative information at the LPITS web site

VERSIONS OF THIS BILL

1/31/2007
2/28/2008
3/4/2008
4/30/2008

NOTE: THIS COPY IS A TEMPORARY VERSION. THIS DOCUMENT WILL REMAIN IN THIS VERSION UNTIL PUBLISHED IN THE ADVANCE SHEETS TO THE ACTS AND JOINT RESOLUTIONS. WHEN THIS DOCUMENT IS PUBLISHED IN THE ADVANCE SHEET, THIS NOTE WILL BE REMOVED.

(A404, R247, H3395)

A JOINT RESOLUTION TO PROVIDE THAT THE SOUTH CAROLINA ENERGY OFFICE AND THE OFFICE OF REGULATORY STAFF SHALL PROVIDE A REPORT TO THE GENERAL ASSEMBLY NOT LATER THAN JANUARY 1, 2009, THAT RECOMMENDS PROCESS AND PROCEDURES FOR ESTABLISHING NET METERING PROGRAMS AT ALL DISTRIBUTION ELECTRIC UTILITIES IN SOUTH CAROLINA, INCLUDING INVESTOR-OWNED ELECTRIC UTILITIES AND THE SOUTH CAROLINA PUBLIC SERVICE AUTHORITY.

Be it enacted by the General Assembly of the State of South Carolina:

Findings

SECTION 1. The General Assembly finds that:

(1) the energy needs of South Carolina are growing at a rapid rate;

(2) solar energy is clean and safe;

(3) the federal Energy Policy Act provides substantial income tax benefits to homeowners and businesses using solar energy;

(4) a major impediment to greater use of solar energy in South Carolina is the difficulty for homeowners to interconnect photovoltaic solar systems on their homes with the electricity grids of electric utilities; and

(5) net metering programs and policies designed to facilitate use of photovoltaic solar energy are already in effect by law or regulation in thirty-nine states.

Net metering report

SECTION 2. The South Carolina Energy Office and the Office of Regulatory Staff, not later than January 1, 2009, shall provide a report to the General Assembly that recommends process and procedures for establishing net metering programs at all distribution electric utilities in

South Carolina, including investor-owned electric utilities and the South Carolina Public Service Authority. In order that this report may be as comprehensive as possible, the General Assembly requests that each electric cooperative and municipal-owned electric utility provide recommendations for process and procedures for establishing net metering programs to the South Carolina Energy Office and the Office of Regulatory Staff by December 1, 2008.

The report must consider net metering requirements of adjacent states, and make recommendations that facilitate interstate uniformity for utilities that serve both South Carolina and a neighboring state. The report also must consider requirements of the federal Energy Policy Act and make recommendations that are consistent with requirements of the federal Energy Policy Act. The report also must consider the need to facilitate consistency with Green Power electricity purchase programs operating in South Carolina.

In preparing the net metering report, the South Carolina Energy Office and the Office of Regulatory Staff shall consult with all affected electric utilities, the State Consumer Advocate, representatives of environmental interests, and the South Carolina Energy Advisory Committee.

Time effective

SECTION 3. This joint resolution takes effect upon approval by the Governor.

Ratified the 8th day of May, 2008.

Approved the 13th day of May, 2008.

APPENDIX B

The Electric Cooperatives of South Carolina Recommendations

The electric cooperatives of South Carolina, on behalf of the 1.5 million South Carolinians who use power from an electric cooperative, appreciate the careful attention that the Office of Regulatory Staff and South Carolina Energy office have brought to the matter of net metering. Representatives of both agencies have solicited the input of the cooperatives about the steps our state can take to make net metering and its associated distributed electric generation a more practical and attractive option for our state's electricity consumers. The state's electric cooperatives, working through their transmission cooperative and purchase power aggregator, Central Electric Power Cooperative, affirmatively took on this challenge in 2007 when they established net metering programs to be offered by local distribution cooperatives with the financial support of Central. Our experience to date has been one of fairly limited use of these net metering programs by our member-customers. Based upon our direct conversations with many of our member-customers who have considered investments in distributed generation, we are finding their decisions to not invest are based upon the current low return on investment from technologies that have yet to prove practical in our state. However, as technology evolves and other options become available, we believe that distributed generation will be a key component of a successful transition to cleaner generation while maintaining reliability and affordability and adding to our nation's energy independence.

Cooperatives in South Carolina do not generate electricity. Cooperatives purchase electricity from several generators for resale. Cooperative leadership—elected

by a democratic vote of the local cooperative's membership—places a substantial premium on electricity delivered by their cooperative being affordable, reliable, and environmentally responsible. For those reasons, cooperatives have developed net metering rates that compensate the distributed electricity generator (the consumer) at a very competitive price. Central, working with local cooperatives, purchases this power based upon average incremental cost of power purchased at the time of either peak or off-peak production. Further, the rates are conditioned upon whether the generation occurs during the warmest or coolest months. Seem complicated? The cooperatives bring a level of clarity to this transaction by transforming a three-party (member-customer, distribution cooperative, transmission cooperative) transaction into a simple three-step entry on the face of the member/customer's bill: 1) you bought $____ from us 2) you sold $ ____ to us and 3) we/you owe $ ____ to you/us. As we read the ORS/State Energy office report, a similar, uncomplicated approach to billing is suggested.

Many of the suggestions put forth in the ORS/State Energy office report presuppose a fully integrated utility where the generation, transmission and distribution may be separate functions <u>but</u> housed within one corporate cost-recovery entity with costs ultimately being borne by either the ratepayer or the shareholder. With South Carolina cooperatives, the steps of generation, transmission and distribution are performed by separate entities. Incentives for programs like net metering must flow from the generation or transmission entity in order for local operating costs to be covered. While cooperatives have made net metering work, they have done so through a commitment to achieving a result (net metering) rather than a commitment to adhering to a particular cost/sale model as is suggested by this report. Interestingly, since our

ratepayers are also our shareholders (receiving refunds, known as capital credits, where collections exceed costs), a very focused effort has been directed toward providing viable opportunities where members, as entrepreneurs, can help their cooperative discover renewable solutions that are South Carolina specific, benefiting them and their fellow members in their pocketbooks. We believe that 1.5 million South Carolinians working collectively will help insure that their electricity is reliable, responsible, and affordable.

As a final comment, renewables are a very desirable aim for our state policymakers to pursue. However, many of the renewables marketed today are not able to deliver real results to most South Carolinians in time to avoid the financial pain that may result from an economy that becomes carbon-constrained by federal legislative or regulatory action. Independent studies, commissioned by South Carolina electric cooperatives, indicate more immediate "bang for our buck" through concentrated development of a state energy policy that places heavy emphasis upon conservation and energy efficiency. Rather than debate whether this state could double, triple or quadruple the current number of distributed electricity generators (noted by the report as being 12), we should focus instead on weatherizing our current housing stock, upgrading our home HVAC systems to be more efficient, and promoting building codes which allow our residents to use less electricity regardless of whether that electricity is generated by fossil fuels, nuclear or renewables. Cooperatives are working on these issues. Our members, our owners, expect it. They always have.

Thank you again for the opportunity to comment.

APPENDIX C

South Carolina Association of Municipal Power Systems Recommendations

The Energy Policy Act of 2005 (EPAct) required municipal electric utilities with annual retail sales of 500 million kWh to consider net metering, time-based (smart) metering and interconnection standards. Two of the twenty-one municipal utilities in South Carolina have retail sales greater than 500 million kWh and studied in-depth the feasibility of implementing these federal standards. These two electric systems are the City of Orangeburg and the City of Rock Hill. Both cities completed the EPAct Consideration Report and scheduled and advertised a public hearing on the issue. Neither city received any written or public comments during the public hearing. The results of the studies conducted by each city led both city councils to delay adopting net metering, time-based metering and interconnection standards.

These decisions were based on the fact that net metering, time-based metering and interconnection standards would not be beneficial to the city from a cost-benefit perspective noting that the city council has a fiduciary responsibility to consider the cost to all citizens rather than the benefit to a few. The negative cost-benefit ratio was due to the cost of installing required technology to offer the programs, the administrative overhead cost and the need for the city to pay for capacity for customers when they may not purchase electricity from the city. Both cities will continue to offer programs which allow a variation of net metering for limited peak hours for commercial users. The cities believe that the economic development benefits of these commercial programs are important in attracting commercial/industrial prospects to their cities and therefore a public benefit.

While Rock Hill and Orangeburg concluded the public costs of these programs outweigh the private benefit to a few citizens, the other 19 municipal electric utilities have even fewer customers over which the costs of these programs may be spread - three utilities have less than 1000 customers, nine have between 1,000 and 5,250 customers and seven have between 5,250 and 15,400 customers.

While it is not the right time for the municipal electric utilities in South Carolina to implement these types of programs, the time may come when the elected governing boards of the municipal electric utilities will determine the cost-benefit analysis does warrant the offering of such programs. Each of the twenty-one municipal electric systems have established priorities important to their owners - the citizens of their cities - and when to offer such programs as net metering will be considered as part of the utility's overall operational strategy. Each governing board must consider factors unique to its own utility.

In addition, each of these municipal utilities has an all-requirements contract with its wholesale electricity provider. It is extremely likely that the provisions of these contracts would have to be modified to allow the municipal utilities to purchase electricity from retail customers. Further, any such purchases should be based upon the average incremental cost of power at the time of either peak or off-peak production.

The South Carolina Association of Municipal Power Systems appreciates the opportunity to comment on this issue.

APPENDIX D

Net Metering Report Advisory Group

Participant	Organization	Interest Represented
Anthony James	SC Office of Regulatory Staff	Group Coordinator
Trish Jerman	SC Energy Office	Group Coordinator
Rep. Laurie Funderburk	S.C. House of Representatives	Legislative
Rep. Mack Toole	S.C. House of Representatives	Legislative
Elliot Elam	SC Dept. of Consumer Affairs	State Consumer Advocate
Ollie Frazier	Duke Energy Carolinas	Investor Owned Utilities
Steve Smith	Duke Energy Carolinas	Investor Owned Utilities
Barbara Yarbrough	Duke Energy Carolinas	Investor Owned Utilities
Brian Stone	Lockhart Power	Investor Owned Utilities
Jim Seay	Lockhart Power	Investor Owned Utilities
Bob Long	SCE&G	Investor Owned Utilities
Steve Wheeler	Progress Energy Carolinas	Investor Owned Utilities
Mitch Williams	Progress Energy Carolinas	Investor Owned Utilities
Eileen Wallace	Santee Cooper	Public Utilities
Mike Couick	Electric Cooperatives of SC	Electric Cooperatives
Charlie Allen	Black River Electric Cooperative	Electric Cooperatives
David Logeman	Central Electric Cooperative	Electric Cooperatives
Miriam Hare	Municipal Association	Municipal Utilities
James McAlister	Municipal Association	Municipal Utilities
Jason Epstein	Outer-ring Energy (solar/wind)	Service Co.
David Odell	Southern Energy Management	Service Co.
Bruce Wood	Sunstore Solar	Service Co.
Pamela Greenlaw	S.C. Sierra Club	Environmental
Ben Moore	S.C. Coastal Conservation League	Environmental
Libby Smith	Private Citizen	Supplier
Raj Singh	Clemson University	Academic
Cathy Saidat	Private Citizen	General interest
Erika Hartwig Meyers	S. C. Solar Council	Installers, Suppliers, Supporters

APPENDIX E

"List of Covered Electric Utilities" under the Public Utility Regulatory Policies Act of 1978 (PURPA)

August 2008

Background

Under Title I of the Public Utility Regulatory Policies Act of 1978 (PURPA), the U.S. Department of Energy (DOE) is required to publish a list identifying each electric utility that Title I applies to. [See PURPA SEC. 102(c).] The following list reflects an updated version of DOE's October 2006 list.

STATE: SOUTH CAROLINA

Regulatory Authority: The Public Service Commission of South Carolina

Private Companies:

Duke Energy Carolinas, LLC
Progress Energy Carolinas, Inc
South Carolina Electric & Gas Company

The Public Service Commission of South Carolina does not have ratemaking authority over the following covered electric utilities:

Cooperatives:

Aiken Electric Coop Inc
Berkeley Electric Coop Inc
Black River Electric Coop Inc
Blue Ridge Electric Coop Inc
Fairfield Electric Coop Inc
Horry Electric Coop Inc
Laurens Electric Coop Inc
Marlboro Electric Coop Inc
Mid-Carolina Electric Coop Inc
Palmetto Electric Coop Inc
Pee Dee Electric Coop Inc
Santee Electric Coop Inc
York Electric Coop Inc

Municipals:

City of Orangeburg
City of Rock Hill

State:

South Carolina Public Service Authority (Santee Cooper)

APPENDIX F

ORGANIZATIONS FURNISHING RETAIL ELECTRIC SERVICE IN SOUTH CAROLINA AS OF OCTOBER 15, 2008

COMPANY	MANAGING OFFICER, ADDRESS	PHONE NUMBER
PRIVATELY OWNED		
CP&L d/b/a Progress Energy Carolinas Inc.	Mr. Lloyd M. Yates, President & CEO P.O. Box 1551 CPB-12, Raleigh, NC 27602-1551	(919)546-5222
Duke Energy Carolinas	Mr. Brett C. Carter, President P. O. Box 1006, Charlotte, NC 28201-1006	(704)594-6200
South Carolina Electric & Gas Company	Mr. Kevin B. Marsh, President and COO SCE&G, Columbia, SC 29218	(803)217-9387
Lockhart Power Company	Mr. Bryan Stone, COO P. O. Box 10, Lockhart, SC 29364	(864)545-2211
Related Organization		
Public Service Commission Of S. C.	Mr. Charles Terreni, Chief Clerk and Administrator P. O. Drawer 11649, Columbia, SC 29211	(803)896-5133
STATE OWNED		
S. C. Public Service Authority	Mr. Lonnie N. Carter, President & CEO P. O. Box 2946101, Moncks Corner, SC 29461-2901	(843)761-8000
CONSUMER OWNED		
Aiken Electric Cooperative	Mr. Gary L. Stooksbury, CEO P. O. Box 417, Aiken, SC 29802-0417	(803) 649-6245
Berkeley Electric Cooperative	Mr. Ervin E. Strickland, Jr., President & CEO P. O. Box 1234, Moncks Corner, SC 29461-1234	(843) 761-8200
Black River Electric Cooperative	Mr. C. H. Leaird, CEO P. O. Box 130, Sumter, SC 29151-0130	(803) 469-8060
Blue Ridge Electric Cooperative	Mr. Charles E. Dalton, President & CEO P. O. Box 277, Pickens, SC 29671	(864) 878-6326
Broad River Electric Cooperative	Mr. J. Richard Baines, President & CEO P. O. Box 2269, Gaffney, SC 29342	(864) 489-5737
Central Electric Cooperative (1)	Mr. Ronald J. Calcaterra, President & CEO P. O. Box 1455, Columbia, SC 29202	(803) 779-4975
Coastal Electric Cooperative	Mr. Lawrence J. Hinz, President & CEO 2269 Jefferies Hwy, Walterboro, SC 29488	(843) 538-5700
Edisto Electric Cooperative	Mr. David E. Felkel, President & CEO P. O. Box 547, Bamberg, SC 29003	(803) 245-5141
Fairfield Electric Cooperative	Mr. William L. Hart, CEO P. O. Box 2500, Blythewood, SC 29016	(803) 754-0153

Haywood Electric Cooperative	Mr. Norman Sloan, Exec. VP and General Manager 1560 Asheville Rd., Waynesville, NC 28786	(828) 452-2281
Horry Electric Cooperative	Mr. James P. Howle, Ex V. P. & CEO P. O. Box 119, Conway, SC 29528-0119	(843) 369-2211
Laurens Electric Cooperative	Mr. J. David Wasson, Jr., President & CEO P. O. Box 700, Laurens, SC 29360	(864) 682-3141
Little River Electric Cooperative	Mr. Roland L. White, General Manager P. O. Box 220, Abbeville, SC 29620	(864) 366-2141
Lynches River Electric Cooperative	Mr. Robert G. Wannamaker, Interim President & CEO P. O. Box 308, Pageland, SC 29728	(843) 675-3200
Marlboro Electric Cooperative	Mr. William L. Fleming, President & CEO P. O. Drawer 1057, Bennettsville, SC 29512	(843) 479-3855
Mid-Carolina Electric Cooperative	Mr. Jack F. Wolfe, Jr., President & CEO P. O. Drawer 669, Lexington, SC 29071	(803) 749-6555
New Horizon Electric Cooperative (3)	Mr. Charles L. Compton, President & CEO P. O. Box 1169, Laurens, SC 29360	(864) 682-3159
Newberry Electric Cooperative	Mr. Daniel P. Murphy, President & CEO P. O. Box 477, Newberry, SC 29108	(803) 276-1121
Palmetto Electric Cooperative	Mr. G. Thomas Upshaw, President & CEO P. O. Box 820, Ridgeland, SC 29936-0820	(843) 726-5551
Pee Dee Electric Cooperative	Mr. E. LeRoy "Toy" Nettles, Jr., President & CEO P. O. Box 491, Darlington, SC 29540	(843) 665-4070
Saluda River Electric Cooperative (2)	Mr. Charles L. Compton, President & CEO P. O. Box 929, Laurens, SC 29360	(864) 682-3169
Santee Electric Cooperative	Mr. Floyd I. Keels, President & CEO P. O. Box 548, Kingstree, SC 29556	(843) 355-6187
Tri-County Electric Cooperative	Mr. B. Robert Paulling, CEO P. O. Box 217, St. Matthews, SC 29135-0217	(803) 874-1215
York Electric Cooperative	Mr. E. Paul Basha, President & CEO P. O. Box 150, York, SC 29745	(803) 684-4247

Related Organization

Electric Cooperatives of South Carolina	Mr. Michael N. Couick, President & CEO 808 Knox Abbott Drive, Cayce, SC 29033	(803) 796-6060

(1) Generation and Transmission Cooperative only
(2) Generation Cooperative only
(3) Transmission Cooperative only

MUNICIPALLY OWNED

City of Abbeville	**Mr. Tim Baker, Director Public Utilities** **P. O. Box 639, Abbeville, SC 29620**	**(864)366-4518**
Bamberg Board of Public Works	**Mr. Bruce G. Ellis, Manager** **P. O. Box 1180, Bamberg, SC 29003**	**(803)245-5128**
City of Bennettsville	**Mr. Max Alderman, Administrator** **P. O. Box 1036, Bennettsville, SC 29512**	**(843)479-9001**
City of Camden	**Mr. Tom Couch, Public Works Director** **1000 Lyttleton Street, Camden, SC 29020**	**(803)425-6045**
City of Clinton	**Mr. Mike Reddeck, Director of Public Works** **1219 Gary Street, Clinton, SC 29325**	**(864)833-7520**
Town of Due West	**Mr. Lewis Saxton, Director Public Utilities** **P. O. Box 278, Due West, SC 29639**	**(864)379-2385**
Easley Combined Utility System	**Mr. Joel D. Ledbetter, General Manager** **P. O. Box 619, Easley, SC 29641**	**(864)859-4013**
Gaffney Board of Public Works	**Mr. Donnie L. Hardin, General Manager** **P. O. Box 64, Gaffney, SC 29342**	**(864)488-8801**
City of Georgetown	**Mr. Alan J. Loveless, Electric Utility Manager** **P. O. Box 1146, Georgetown, SC 29442**	**(843)545-4600**
Greenwood Commission of Public Works	**Mr. Steve Reeves, Jr., General Manager** **P. O. Box 549, Greenwood, SC 29648**	**(864)942-8105**
Greer Commission of Public Works	**Mr. H. Jerry Balding, General Manager** **P. O. Box 216, Greer, SC 29652**	**(864)848-5505**
Laurens Commission of Public Works	**Mr. Irvin D. Satterfield, General Manager** **P. O. Box 349, Laurens, SC 29360**	**(864)984-0481**
McCormick Commission of Public Works	**Mr. Benjamin Lewis, Superintendent** **214 Calhoun Street, McCormick, SC 29835**	**(864)852-2224, Ext 24**
City of Newberry	**Mr. Fred Yandle, Utility Director** **1330 College Street, Newberry, SC 29108**	**(803)321-1018**
Orangeburg Dept. of Public Utilities	**Mr. John B. Bagwell, Director, Electric Division** **P. O. Box 1057, Orangeburg, SC 29116**	**(803)268-4201**
Town of Prosperity	**Mr. Fred Sexton, Director of Public Works** **P. O. Box 36, Prosperity, SC 29127**	**(803)364-2622**
City of Rock Hill	**Mr. Nick W. Stegall, Public Services Administrator** **P. O. Box 11706, Rock Hill, SC 29731**	**(803)329-5519**
Seneca Light & Water Plant	**Mr. Gregory P. Dietterick, Administrator** **P. O. Box 4773, Seneca, SC 29679**	**(864)888-0880**

City of Union	**Mr. Joe Nichols, Administrator** **P. O. Box 987, Union, SC 29379**	**(864)429-1721**
City of Westminster	**Mr. John David Smith, Administrator** **PO Box 399, Westminster, SC 29693-0399**	**(864)647-3232**
Town of Winnsboro	**Mr. Charles William Medlin, Dir. Electrical Utilities** **P. O. Box 209, Winnsboro, SC 29180**	**(803)635-4943**

Related Organizations

S.C. Assoc. of Municipal Power Systems	**Mr. John Bagwell, President** **P. O. Box 12109, Columbia, SC 29211**	**(803)799-9574**
Municipal Association of South Carolina	**Ms. Miriam Hair, Executive Director** **P. O. Box 12109, Columbia, SC 29211**	**(803)933-1204**
Piedmont Municipal Power Agency	**Mr. Coleman Smoak, General Manager** **121 Village Drive, Greer, SC 29651**	**(864)877-9632**

APPENDIX G

CUSTOMER A

DEC Billing Example

Net Metering for Renewable Energy Facilities (Flat Rate - Excess)

SCHEDULE RS (CATEGORY 2) AND RIDER SCG -- 2 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule (RS Category 2) - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER		Normal	Net Billed	Summer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER		Normal	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

Schedule RS (Category 2) with Rider SCG and PP for Excess Usage 2 kW PV system

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER		Normal	Generated	Net Billed	Summer
RS	Basic Customer Charge	$6.16				$6.16
RS	First 1000 kWh	$0.077058	1000	250	750	$57.79
RS	Over 1000 kWh	$0.091948	0		0	$0.00
SCG	Supplemental Basic Facilities	$3.75				$3.75
SCG	Standby Charge	$0.95	2			$1.90
PP	On-peak Excess kwh	($0.054400)		20		($1.09)
PP	Off-peak Excess kwh	($0.039000)		1		($0.04)
						$68.48

Savings Summer	**$14.74**
% Savings Summer	**18%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER		Normal	Generated	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16				$6.16
RS	First 1000 kWh	$0.077058	1000	140	860	$66.27
RS	Over 1000 kWh	$0.091948	0			$0.00
SCG	Supplemental Basic Facilities	$3.75				$3.75
SCG	Standby Charge	$0.95	2			$1.90
PP	On-peak Excess kwh	($0.054400)		40		($2.18)
PP	Off-peak Excess kwh	($0.039000)		10		($0.39)
						$75.51

Savings Nonsummer	**$7.70**
% Savings Nonsummer	**9%**

Note: Summer months are June - September
Nonsummer months are October through May

CUSTOMER A

DEC Billing Example

Net Metering for Renewable Energy Facilities (TOUD - No Excess)

SCHEDULE RT AND RIDER NM -- 2 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule (RS Category 2) - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER		Normal	Net Billed	Summer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER		Normal	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

TOUD Schedule RT with Rider NM 2 kW PV System

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER		Normal	Generated	Net Billed	Summer
RT	Basic Customer Charge	$11.59				$11.59
RT	On-peak Demand Charge	$6.41	3.5	0.2	3.3	$21.15
RT	On-peak Energy Charge	$0.056110	240	105	135	$7.57
RT	Off-peak Energy Charge	$0.046312	760	160	600	$27.79
						$68.11

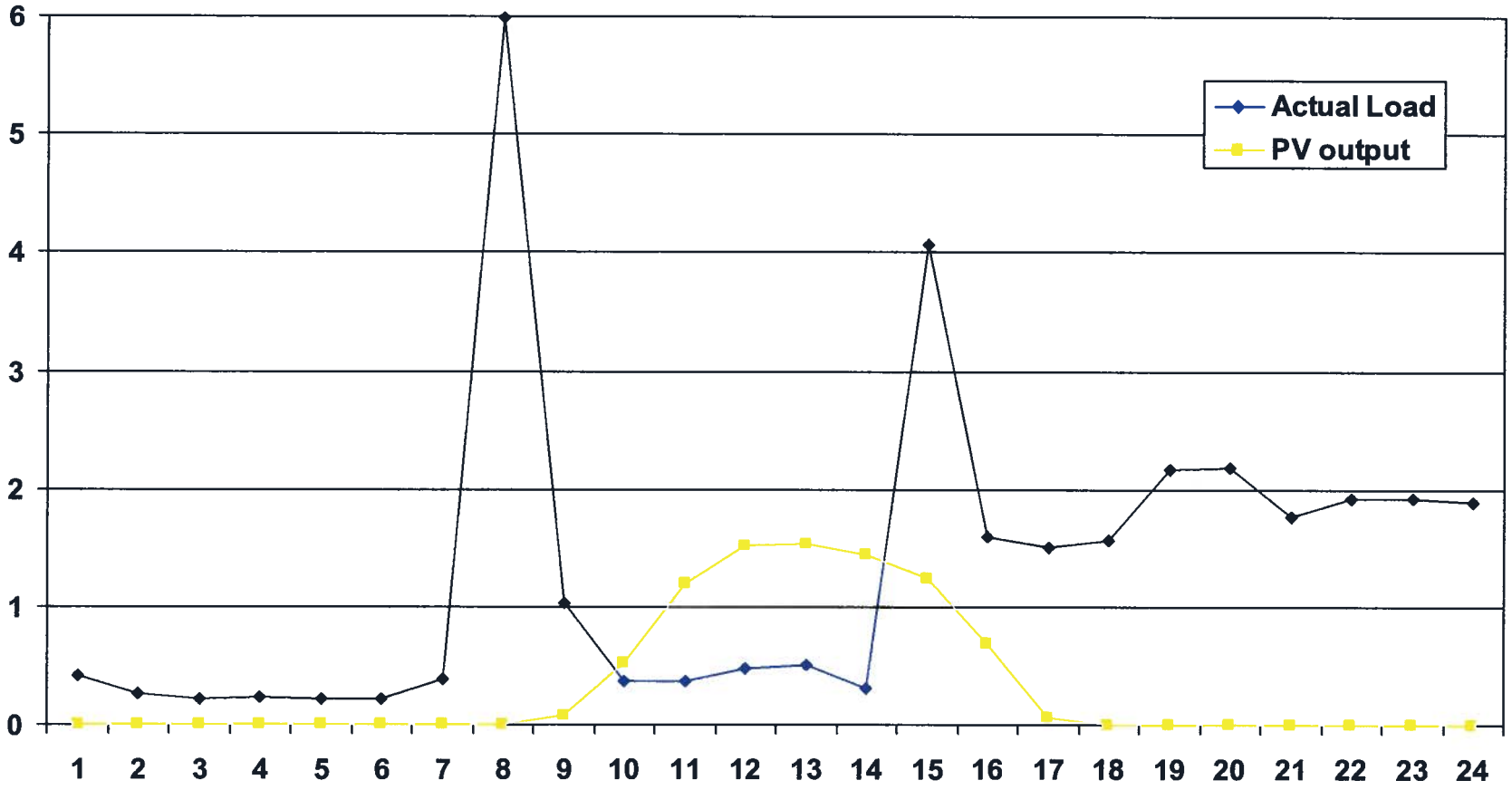
Savings Summer	**$15.11**
% Savings Summer	**18%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER		Normal	Generated	Net Billed	Nonsumer
RT	Basic Customer Charge	$11.59				$11.59
RT	On-peak Demand Charge	$3.21	7.0	0.5	6.5	$20.87
RT	On-peak Energy Charge	$0.056110	230	60	170	$9.54
RT	Off-peak Energy Charge	$0.046312	770	135	635	$29.41
						$71.40

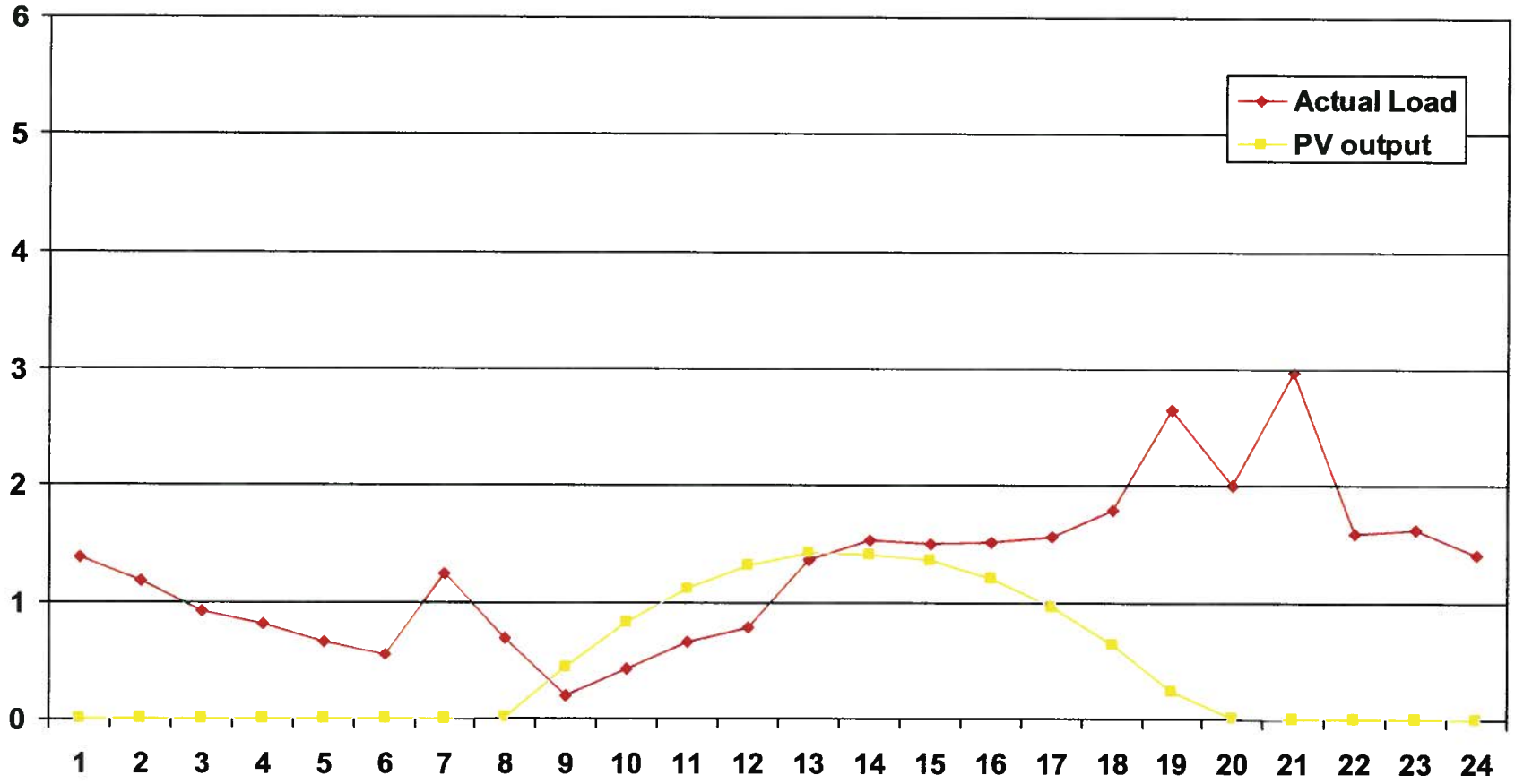
Savings Nonsummer	**$11.82**
% Savings Nonsummer	**14%**

Note: Summer months are June - September
Nonsummer months are October through May

Customer A
2 kW PV System
January 14, 2008



Customer A
2 kW PV System
July 17, 2008



CUSTOMER A

DEC Billing Example

Net Metering for Renewable Energy Facilities (Flat Rate - Excess)

SCHEDULE RS (CATEGORY 2) AND RIDER SCG -- 6 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule (RS Category 2) - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER		Normal	Net Billed	Summer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER		Normal	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058		1000	$77.06
RS	Over 1000 kWh	$0.091948		0	$0.00
					$83.22

Schedule RS (Category 2) with Rider SCG and PP for Excess Usage 6 kW PV System

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER		Normal	Generated	Net Billed	Summer
RS	Basic Customer Charge	$6.16				$6.16
RS	First 1000 kWh	$0.077058	1000	350	650	$50.09
RS	Over 1000 kWh	$0.091948	0		0	$0.00
SCG	Supplemental Basic Facilities	$3.75				$3.75
SCG	Standby Charge	$0.95	6			$5.70
PP	On-peak Excess kwh	($0.054400)		260		($14.14)
PP	Off-peak Excess kwh	($0.039000)		70		($2.73)
						$48.82

Savings Summer	**$34.39**
% Savings Summer	**41%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER		Normal	Generated	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16				$6.16
RS	First 1000 kWh	$0.077058	1000	200	800	$61.65
RS	Over 1000 kWh	$0.091948	0			$0.00
SCG	Supplemental Basic Facilities	$3.75				$3.75
SCG	Standby Charge	$0.95	6			$5.70
PP	On-peak Excess kwh	($0.054400)		200		($10.88)
PP	Off-peak Excess kwh	($0.039000)		65		($2.54)
						$63.84

Savings Nonsummer	**$19.38**
% Savings Nonsummer	**23%**

Note: Summer months are June - September
Nonsummer months are October through May

CUSTOMER A

DEC Billing Example

Net Metering for Renewable Energy Facilities Rider NM (TOUD - No Excess)

SCHEDULE RT AND RIDER NM -- 6 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule (RS Category 2) - No PV System Installed

Rate	Charges		Customer Usage (kWh) Normal	Net Billed	Monthly Bill Summer
	SUMMER				
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

			Customer Usage (kWh) Normal	Net Billed	Monthly Bill Nonsummer
	NONSUMMER				
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058		1000	$77.06
RS	Over 1000 kWh	$0.091948		0	$0.00
					$83.22

TOUD Schedule RT with Rider NM 6 kW PV System

Rate	Charges		Customer Usage (kWh) Normal	Generated	Net Billed	Monthly Bill Summer
	SUMMER					
RT	Basic Customer Charge	$11.59				$11.59
RT	On-peak Demand Charge	$6.41	3.5	0.5	3.0	$19.23
RT	On-peak Energy Charge	$0.056110	240	235	5	$0.28
RT	Off-peak Energy Charge	$0.046312	760	445	315	$14.59
						$45.69

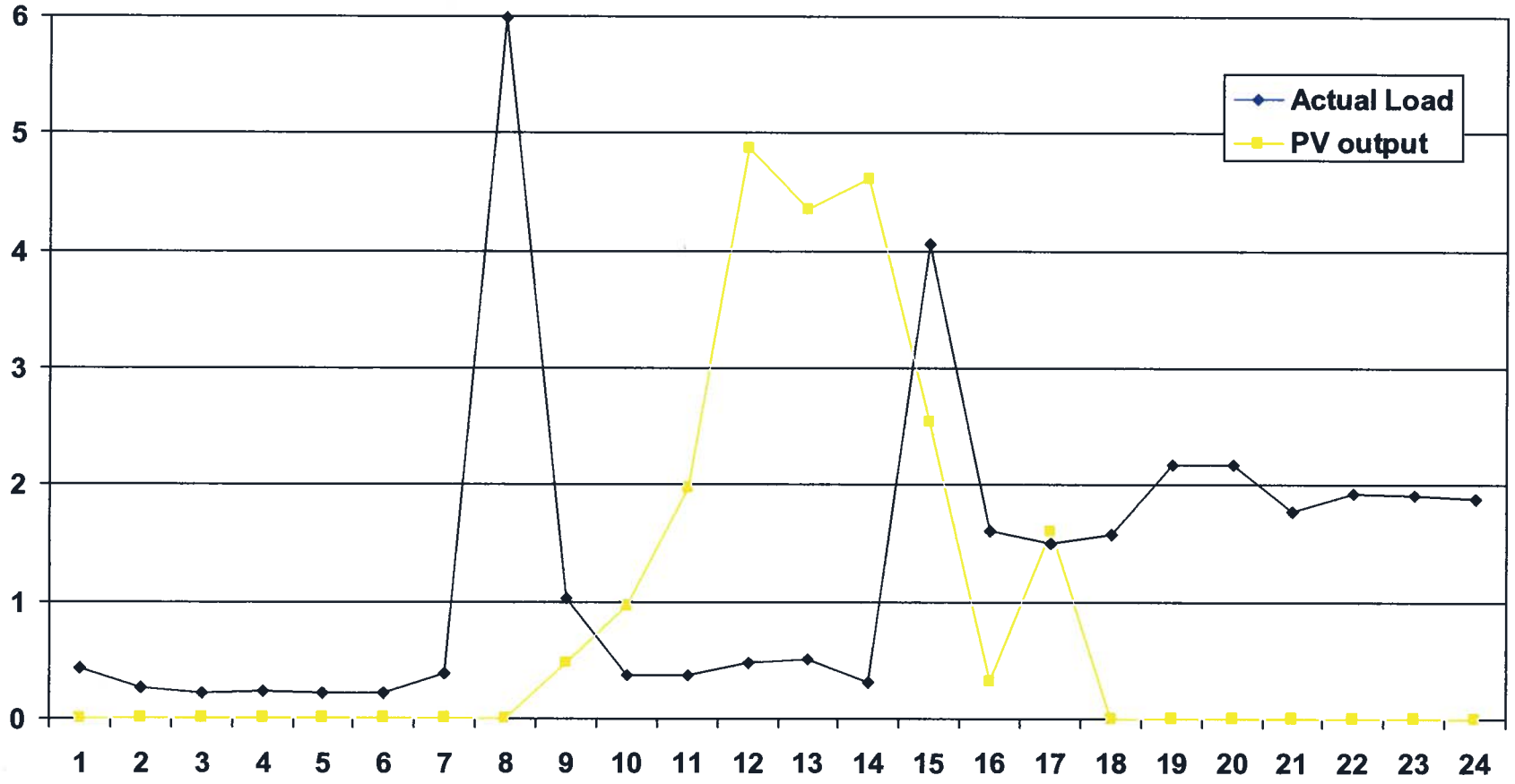
Savings Summer	**$37.53**
% Savings Summer	**45%**

			Customer Usage (kWh) Normal	Generated	Net Billed	Monthly Bill Nonsummer
	NONSUMMER					
RT	Basic Customer Charge	$11.59				$11.59
RT	On-peak Demand Charge	$3.21	7.0	0.2	6.8	$21.83
RT	On-peak Energy Charge	$0.056110	230	140	90	$5.05
RT	Off-peak Energy Charge	$0.046312	770	330	440	$20.38
						$58.85

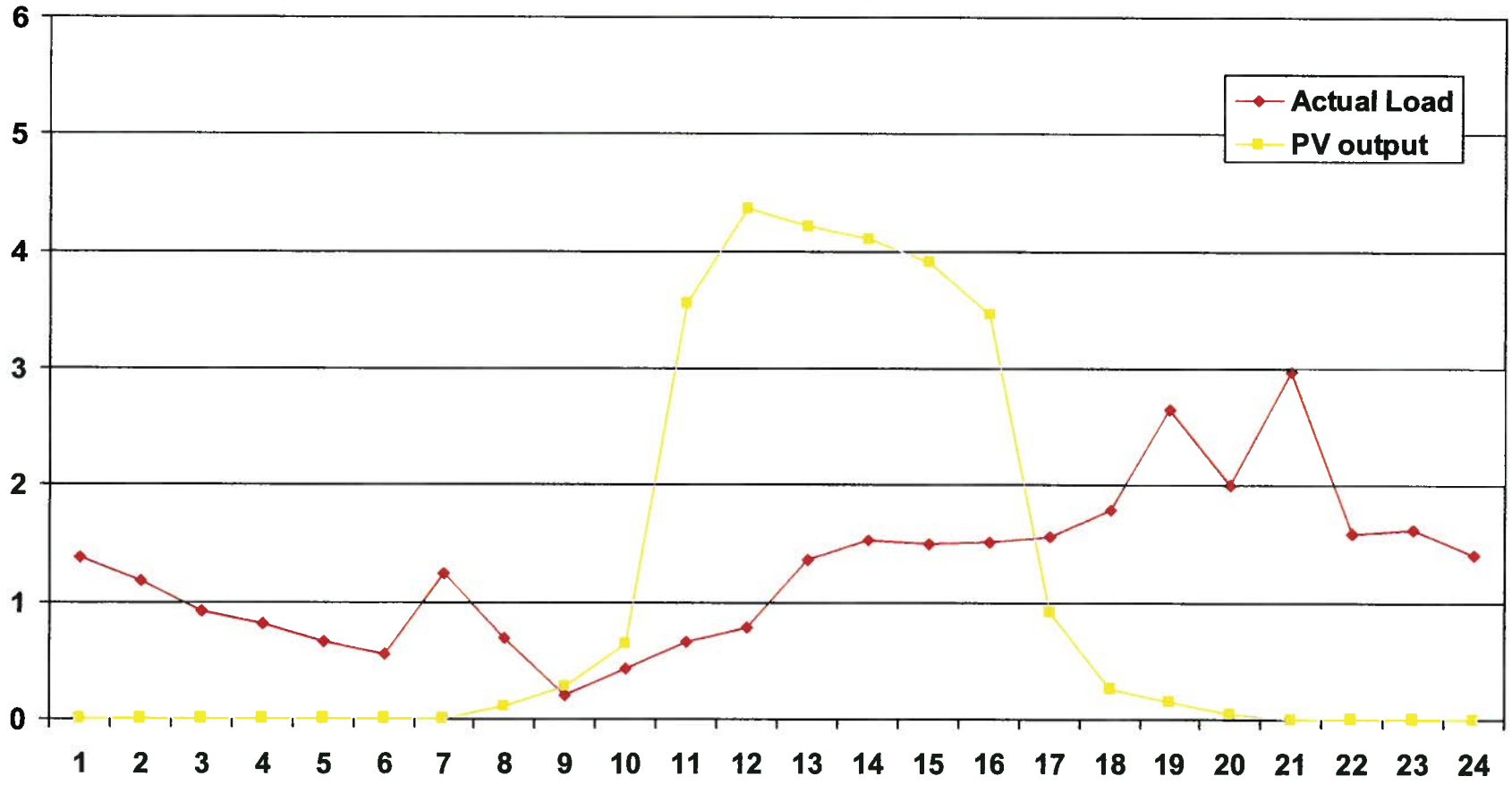
Savings Nonsummer	**$24.37**
% Savings Nonsummer	**29%**

Note: Summer months are June - September
Nonsummer months are October through May

Customer A
6 kW PV System
January 14, 2008



Customer A
6 kW PV System
July 17, 2008



CUSTOMER B

DEC Billing Example

Net Metering for Renewable Energy Facilities Rider NM (Flat Rate - Excess)

SCHEDULE RS (CATEGORY 2) AND RIDER SCG -- 2 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule (RS Category 2) - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER		Normal	Net Billed	Summer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER		Normal	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058		1000	$77.06
RS	Over 1000 kWh	$0.091948		0	$0.00
					$83.22

Schedule RS (Category 2) with Rider SCG and PP for Excess Usage 2 kW PV System

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER		Normal	Generated	Net Billed	Summer
RS	Basic Customer Charge	$6.16				$6.16
RS	First 1000 kWh	$0.077058	1000	200	800	$61.65
RS	Over 1000 kWh	$0.091948	0		0	$0.00
SCG	Supplemental Basic Facilities	3.75				$3.75
SCG	Standby Charge	0.95	2			$1.90
PP	On-peak Excess kwh	($0.054400)		65		($3.54)
PP	Off-peak Excess kwh	($0.039000)		10		($0.39)
						$69.53

Savings Summer	**$13.69**
% Savings Summer	**16%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER		Normal	Generated	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16				$6.16
RS	First 1000 kWh	$0.077058	1000	170	830	$63.96
RS	Over 1000 kWh	$0.091948	0			$0.00
SCG	Supplemental Basic Facilities	$3.75				$3.75
SCG	Standby Charge	$0.95	2			$1.90
PP	On-peak Excess kwh	($0.054400)		25		($1.36)
PP	Off-peak Excess kwh	($0.039000)		1		($0.039)
						$74.37

Savings Nonsummer	**$8.85**
% Savings Nonsummer	**11%**

Note: Summer months are June - September
Nonsummer months are October through May

CUSTOMER B

DEC Billing Example

Net Metering for Renewable Energy Facilities Rider NM (TOUD - No Excess)

SCHEDULE RT AND RIDER NM -- 2 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule (RS Category 2) - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER		Normal	Net Billed	Summer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER		Normal	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058		1000	$77.06
RS	Over 1000 kWh	$0.091948		0	$0.00
					$83.22

TOUD Schedule RT with Rider NM 2 kW PV System

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER		Normal	Generated	Net Billed	Summer
RT	Basic Customer Charge	$11.59				$11.59
RT	On-peak Demand Charge	$6.41	7.5	0.6	6.9	$44.23
RT	On-peak Energy Charge	$0.056110	275	95	180	$10.10
RT	Off-peak Energy Charge	$0.046312	725	165	560	$25.93
						$91.85

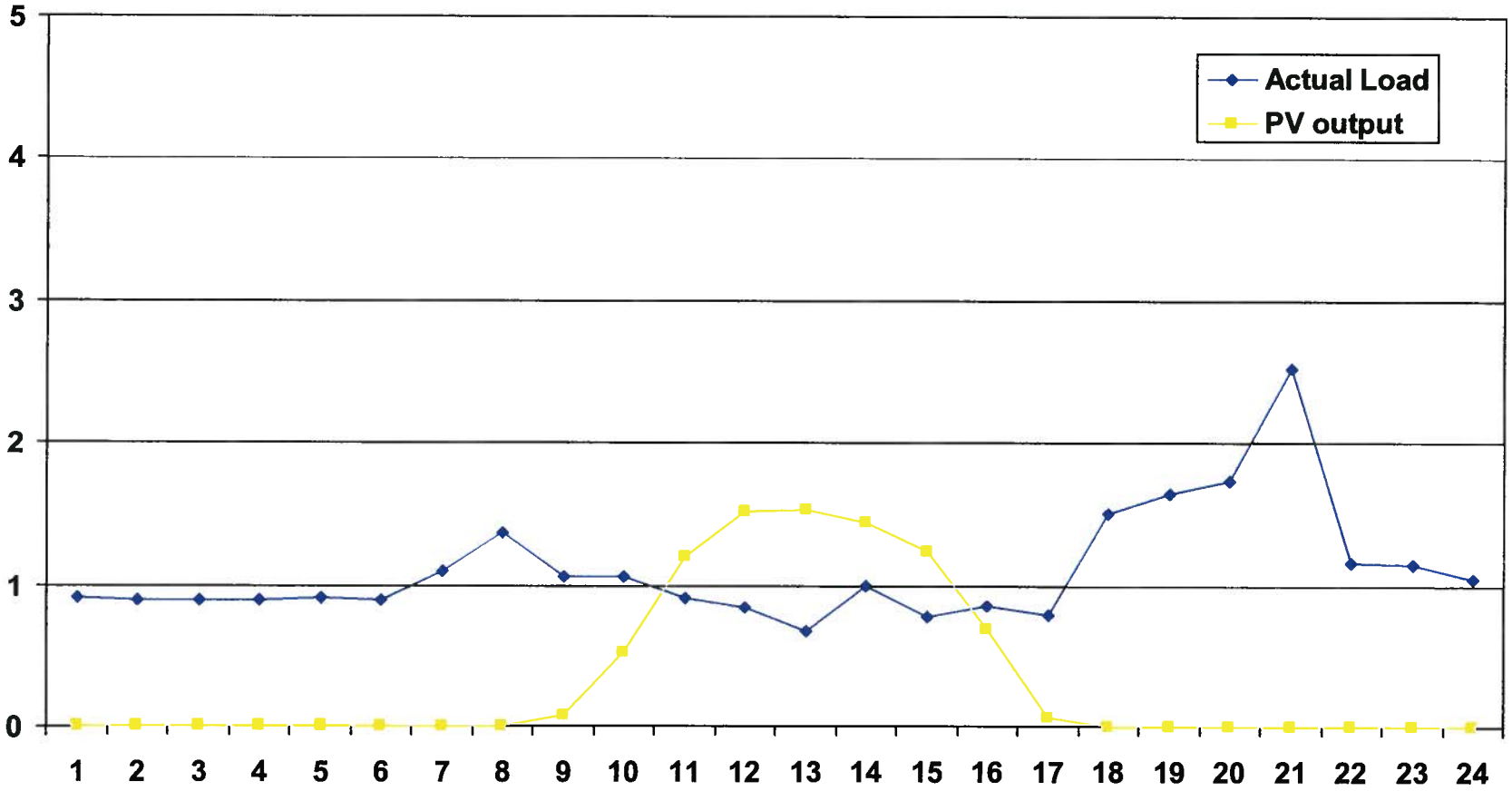
Savings Summer	**($8.64)**
% Savings Summer	**-10%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER		Normal	Generated	Net Billed	Nonsummer
RT	Basic Customer Charge	$11.59				$11.59
RT	On-peak Demand Charge	$3.21	3.1	0.2	2.9	$9.31
RT	On-peak Energy Charge	$0.056110	130	60	70	$3.93
RT	Off-peak Energy Charge	$0.046312	870	135	735	$34.04
						$58.87

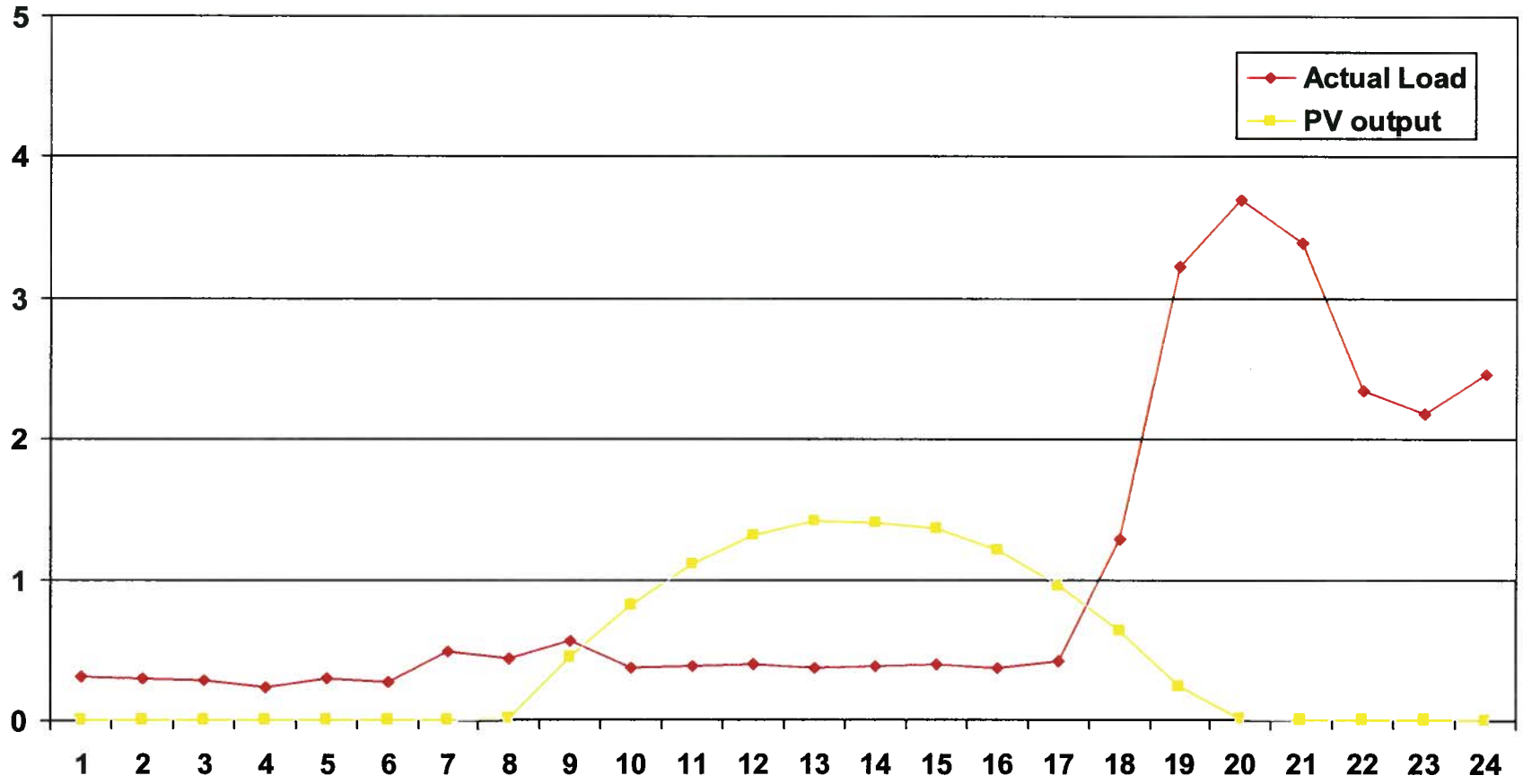
Savings Nonsummer	**$24.35**
% Savings Nonsummer	**29%**

Note: Summer months are June - September
Nonsummer months are October through May

Customer B
2 kW PV System
January 14, 2008



Customer B
2 kW PV System
July 17, 2008



CUSTOMER B

DEC Billing Example

Net Metering for Renewable Energy Facilities Rider NM (Flat Rate - Excess)

SCHEDULE RS (CATEGORY 2) AND RIDER SCG -- 6 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule (RS Category 2) - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER		Normal	Net Billed	Summer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER		Normal	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058		1000	$77.06
RS	Over 1000 kWh	$0.091948		0	$0.00
					$83.22

Schedule RS (Category 2) with Rider SCG and PP for Excess Usage 6 kW PV system

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER		Normal	Generated	Net Billed	Summer
RS	Basic Customer Charge	$6.16				$6.16
RS	First 1000 kWh	$0.077058	1000	320	680	$52.40
RS	Over 1000 kWh	$0.091948	0		0	$0.00
SCG	Supplemental Basic Facilities	$3.75				$3.75
SCG	Standby Charge	$0.95	6			$5.70
PP	On-peak Excess kwh	($0.054400)		300		($16.32)
PP	Off-peak Excess kwh	($0.039000)		60		($2.34)
						$49.35

Savings Summer	**$33.87**
% Savings Summer	**41%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER		Normal	Generated	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16				$6.16
RS	First 1000 kWh	$0.077058	1000	215	785	$60.49
RS	Over 1000 kWh	$0.091948	0			$0.00
SCG	Supplemental Basic Facilities	$3.75				$3.75
SCG	Standby Charge	$0.95	6			$5.70
PP	On-peak Excess kwh	($0.054400)		210		($11.42)
PP	Off-peak Excess kwh	($0.039000)		45		($1.76)
						$62.92

Savings Nonsummer	**$20.30**
% Savings Nonsummer	**24%**

Note: Summer months are June - September
Nonsummer months are October through May

CUSTOMER B

DEC Billing Example

Net Metering for Renewable Energy Facilities Rider NM (TOUD - No Excess)

SCHEDULE RT AND RIDER NM -- 6 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule (RS Category 2) - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER		Normal	Net Billed	Summer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058	1000	1000	$77.06
RS	Over 1000 kWh	$0.091948	0	0	$0.00
					$83.22

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER		Normal	Net Billed	Nonsummer
RS	Basic Customer Charge	$6.16			$6.16
RS	First 1000 kWh	$0.077058		1000	$77.06
RS	Over 1000 kWh	$0.091948		0	$0.00
					$83.22

TOUD Schedule RT with Rider NM 6 kW PV System

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER		Normal	Generated	Net Billed	Summer
RT	Basic Customer Charge	$11.59				$11.59
RT	On-peak Demand Charge	$6.41	7.5	0.5	7.0	$44.87
RT	On-peak Energy Charge	$0.056110	275	230	45	$2.52
RT	Off-peak Energy Charge	$0.046312	725	450	275	$12.74
						$71.72

Savings Summer	**$11.50**
% Savings Summer	**14%**

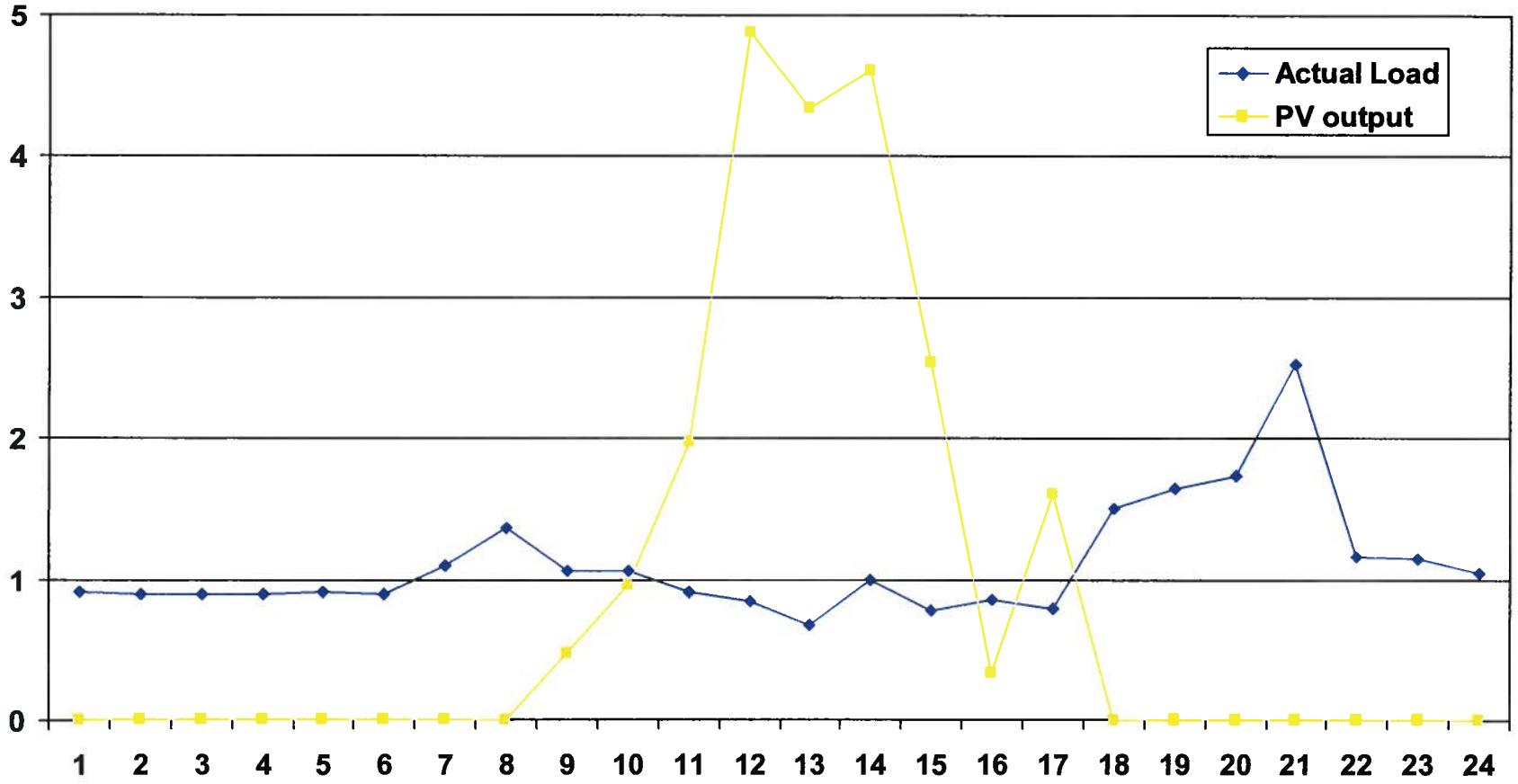
			Customer Usage (kWh)			Monthly Bill
	NONSUMMER		Normal	Generated	Net Billed	Nonsummer
RT	Basic Customer Charge	$11.59				$11.59
RT	On-peak Demand Charge	$3.21	3.1	0.6	2.5	$8.03
RT	On-peak Energy Charge	$0.056110	130	140	0	$0.00
RT	Off-peak Energy Charge	$0.046312	870	330	540	$25.01
						$44.62
RT	Excess On-Peak Energy	($0.056110)		10		($0.56)
RT	Excess Off-Peak Energy	($0.046312)		0		$0.00
	Total with Excess On-Peak Energy applied to Off-Peak Energy Charge					$44.06

Savings Nonsummer	**$39.16**
% Savings Nonsummer	**47%**

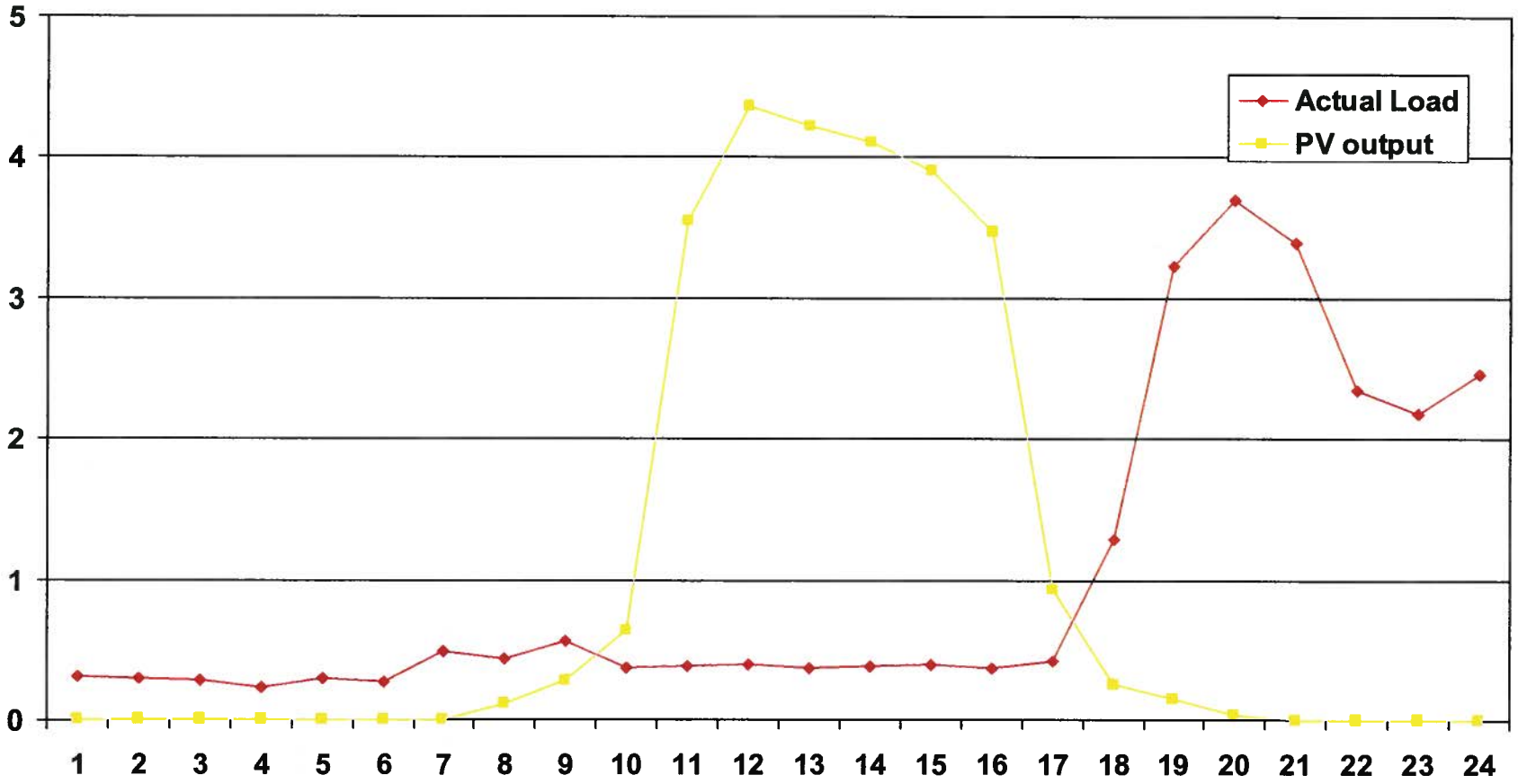
* Excess on-peak applies to current month off-peak charges, but off-peak excess must carry over to following month

Note: Summer months are June - September
Nonsummer months are October through May

Customer B
6 kW PV System
January 14, 2008



Customer B
6 kW PV System
July 17, 2008



APPENDIX H

Progress Energy Carolinas
Net Metering Rate Options Applicable to Residential Customers

Progress Energy reviewed consumption for a residential customer using 1,000 kWh per month to assess how the monthly bill would be influenced by the installation of a 2 kW or a 6 kW photo-voltaic generation system. The review considered hourly generation from an actual PV installation to determine the average generation output during the summer and non-summer months. A 2 kW PV system would generate an average monthly output as follows:

2 kW PV Generation	On-peak	Off-peak	Total
Summer Months	130	108	238
Non-Summer Months	102	107	209
Annual Average	112	107	219

Progress Energy offers two Net Metering options. Net Metering for Renewable Energy Facilities Rider NM requires the customer to receive retail service under a time-of-use schedule that includes a demand charge (this would be the Residential Time of Use Demand Schedule R-TOUD for a residential account). Any generation would be first used to offset normal retail service. If the system generates excess electricity, this excess would be used to reduce any consumption during the billing month or would be carried forward into a future month and then be used to reduce future usage.

The second rate option is Net Metering for Renewable Energy Facilities (Excess Energy Sales) Rider NME that allows the customer to select any retail schedule, including the Residential Service schedule RES that has only a kWh charge and a Customer Charge. Any generation would be first used to offset normal retail service. If the system generates excess electricity, the customer receives a payment for these kWh at the approved PURPA purchase power rates. Under Rider NME, the customer pays, in addition to the normal bill for retail service, a monthly Meter Facilities Charge of $3.10 for a TOU meter capable of recording both consumption and excess generation.

When a typical residential customer consuming 1,000 kWh per month installs a 2 kW PV generation system, the monthly billing is impacted as follows:

Rate Schedule	Monthly Bill	Monthly Savings	Percent Savings
RES-11	$101.96		
RES-11 w/ Rider Net Metering Rider NME-1	$85.82	$16.14	16%
R-TOUD-11 w/ Net Metering Excess Energy Sales Rider NM-3A	$80.15	$21.81	21%

When a 6 kW system is installed on an average residential account, the billing is impacted as follows:

Rate Schedule	Monthly Bill	Monthly Savings	Percent Savings
RES-11	$101.96		
RES-11 w/ Rider Net Metering Rider NME-1	$55.82	$46.14	45%
R-TOUD-11 w/ Net Metering Excess Energy Sales Rider NM-3A	$58.89	$43.07	42%

The attached tables provide the detailed rate calculations supporting the monthly bill calculations.

Progress Energy Carolinas, Inc. Billing Example
Net Metering for Renewable Energy Facilities Excess Energy Sales (Flat Rate)

SCHEDULE RES-11 w/ Rider NME-1 -- 2 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule RES-11 - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER (June - September)		Normal	Net Billed	Summer
RES-11	Basic Customer Charge	$6.50			$6.50
RES-11	All kWh	$0.09702	1000	1000	$97.02
			0	0	$0.00
					$103.52

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER (October - May)		Normal	Net Billed	Nonsummer
RES-11	Basic Customer Charge	$6.50			$6.16
RES-11	First 800 kWh	$0.09702	800	800	$77.62
RES-11	Over 800 kWh	$0.08702	200	200	$17.40
					$101.18

Schedule RES-11 - 2 kW PV system (credit under Schedule CSP excess generation)

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER (June - September)		Normal	Generated	Net Billed	Summer
RES-11	Basic Customer Charge	$6.50				$6.50
RES-11	All kWh	$0.09702	1000	236	764	$74.12
CSP-24	On-peak Excess kwh	($0.04719)		2		($0.09)
CSP-24	Off-peak Excess kwh	($0.03438)		0		$0.00
NME-1	Metering Facilities Charge	$3.10				$3.10
						$83.63

Savings Summer	**$19.89**
% Savings Summer	**19%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER (October - May)		Normal	Generated	Net Billed	Nonsummer
RES-11	Basic Customer Charge	$6.50				$6.50
RES-11	First 800 kWh	$0.09702	800		800	$77.62
RES-11	Over 800 kWh	$0.08702	200	198	2	$0.17
CSP-24	On-peak Excess kwh	($0.04719)		8		($0.38)
CSP-24	Off-peak Excess kwh	($0.03438)		3		($0.10)
NME-1	Metering Facilities Charge	$3.10				$3.10
						$86.91

Savings Nonsummer	**$14.27**
% Savings Nonsummer	**14%**

	Standard	Net Metering
Average Annual Monthly Bill	**$101.96**	**$85.82**
Savings with Net Metering		**$16.14**
% Savings Annual		**16%**

Note: Summer months are June - September
Nonsummer months are October through May

Progress Energy Carolinas, Inc. Billing Example
Net Metering for Renewable Energy Facilities (TOUD Rate)

SCHEDULE R-TOUD-11 w/ Rider NM-1 -- 2 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule RES-11 - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER (June - September)		Normal	Net Billed	Summer
RES-11	Basic Customer Charge	$6.50			$6.50
RES-11	All kWh	$0.09702	1000	1000	$97.02
			0	0	$0.00
					$103.52

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER (October - May)		Normal	Net Billed	Nonsummer
RES-11	Basic Customer Charge	$6.50			$6.16
RES-11	First 800 kWh	$0.09702	800	800	$77.62
RES-11	Over 800 kWh	$0.08702	200	200	$17.40
					$101.18

Schedule R-TOUD-11 - 2 kW PV system (credit under Schedule CSP excess generation)

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER (June - September)		Normal	Generated	Net Billed	Summer
R-TOUD-11	Basic Customer Charge	$9.10				$9.10
R-TOUD-11	On-peak kW	$5.20	5.88	0	5.88	$30.58
R-TOUD-11	On-peak kWh	$0.06887	388	128	260	$17.91
R-TOUD-11	Off-peak kWh	$0.05285	612	108	504	$26.64
CSP-24	On-peak Excess kwh	($0.04719)		2		($0.09)
CSP-24	Off-peak Excess kwh	($0.03438)		0		$0.00
						$84.12

Savings Summer	**$19.40**
% Savings Summer	**19%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER (October - May)		Normal	Generated	Net Billed	Nonsummer
R-TOUD-11	Basic Customer Charge	$9.10				$9.10
R-TOUD-11	On-peak kW	$3.89	5.77	0	5.77	$22.45
R-TOUD-11	On-peak kWh	$0.06887	388	94	294	$20.25
R-TOUD-11	Off-peak kWh	$0.05285	612	104	508	$26.85
CSP-24	On-peak Excess kwh	($0.04719)		8		($0.38)
CSP-24	Off-peak Excess kwh	($0.03438)		3		($0.10)
						$78.16

Savings Nonsummer	**$23.02**
% Savings Nonsummer	**23%**

	Standard	Net Metering
Average Annual Monthly Bill	**$101.96**	**$80.15**
Savings with Net Metering		**$21.81**
% Savings Annual		**21%**

Note: Summer months are June - September
Nonsummer months are October through May

Progress Energy Carolinas, Inc. Billing Example
Net Metering for Renewable Energy Facilities Excess Energy Sales (Flat Rate)

SCHEDULE RES-11 w/ Rider NME-1 -- 6 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule RES-11 - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER (June - September)		Normal	Net Billed	Summer
RES-11	Basic Customer Charge	$6.50			$6.50
RES-11	All kWh	$0.09702	1000	1000	$97.02
			0	0	$0.00
					$103.52

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER (October - May)		Normal	Net Billed	Nonsummer
RES-11	Basic Customer Charge	$6.50			$6.16
RES-11	First 800 kWh	$0.09702	800	800	$77.62
RES-11	Over 800 kWh	$0.08702	200	200	$17.40
					$101.18

Schedule RES-11 - 6 kW PV system (credit under Schedule CSP excess generation)

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER (June - September)		Normal	Generated	Net Billed	Summer
RES-11	Basic Customer Charge	$6.50				$6.50
RES-11	All kWh	$0.09702	1000	615	385	$37.35
CSP-24	On-peak Excess kwh	($0.04719)		99		($4.67)
CSP-24	Off-peak Excess kwh	($0.03438)		0		$0.00
NME-1	Metering Facilities Charge	$3.10				$3.10
						$42.28

Savings Summer	**$61.24**
% Savings Summer	**59%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER (October - May)		Normal	Generated	Net Billed	Nonsummer
RES-11	Basic Customer Charge	$6.50				$6.50
RES-11	First 800 kWh	$0.09702	800	126	674	$65.39
RES-11	Over 800 kWh	$0.08702	200	200	0	$0.00
CSP-24	On-peak Excess kwh	($0.04719)		158		($7.46)
CSP-24	Off-peak Excess kwh	($0.03438)		144		($4.95)
NME-1	Metering Facilities Charge	$3.10				$3.10
						$62.58

Savings Nonsummer	**$38.60**
% Savings Nonsummer	**38%**

	Standard	Net Metering
Average Annual Monthly Bill	**$101.96**	**$55.82**
Savings with Net Metering		**$46.14**
% Savings Annual		**45%**

Note: Summer months are June - September
Nonsummer months are October through May

Progress Energy Carolinas, Inc. Billing Example
Net Metering for Renewable Energy Facilities (TOUD Rate)

SCHEDULE R-TOUD-11 w/ Rider NM-1 -- 6 kW PV System

(Monthly customer energy requirements are 1000 kWh)

Schedule RES-11 - No PV System Installed

Rate	Charges		Customer Usage (kWh)		Monthly Bill
	SUMMER (June - September)		Normal	Net Billed	Summer
RES-11	Basic Customer Charge	$6.50			$6.50
RES-11	All kWh	$0.09702	1000	1000	$97.02
			0	0	$0.00
					$103.52

			Customer Usage (kWh)		Monthly Bill
	NONSUMMER (October - May)		Normal	Net Billed	Nonsummer
RES-11	Basic Customer Charge	$6.50			$6.16
RES-11	First 800 kWh	$0.09702	800	800	$77.62
RES-11	Over 800 kWh	$0.08702	200	200	$17.40
					$101.18

Schedule R-TOUD-11 - 6 kW PV system (credit under Schedule CSP excess generation)

Rate	Charges		Customer Usage (kWh)			Monthly Bill
	SUMMER (June - September)		Normal	Generated	Net Billed	Summer
R-TOUD-11	Basic Customer Charge	$9.10				$9.10
R-TOUD-11	On-peak kW	$5.20	5.88		5.88	$30.58
R-TOUD-11	On-peak kWh	$0.06887	388	256	132	$9.09
R-TOUD-11	Off-peak kWh	$0.05285	612	225	387	$20.45
CSP-24	On-peak Excess kwh	($0.04719)		134		($6.32)
CSP-24	Off-peak Excess kwh	($0.03438)		99		($3.40)
						$59.49

Savings Summer	**$44.03**
% Savings Summer	**43%**

			Customer Usage (kWh)			Monthly Bill
	NONSUMMER (October - May)		Normal	Generated	Net Billed	Nonsummer
R-TOUD-11	Basic Customer Charge	$9.10				$9.10
R-TOUD-11	On-peak kW	$3.89	5.77		5.77	$22.45
R-TOUD-11	On-peak kWh	$0.06887	388	149	239	$16.46
R-TOUD-11	Off-peak kWh	$0.05285	612	177	435	$22.99
CSP-24	On-peak Excess kwh	($0.04719)		158		($7.46)
CSP-24	Off-peak Excess kwh	($0.03438)		144		($4.95)
						$58.59

Savings Nonsummer	**$42.59**
% Savings Nonsummer	**42%**

	Standard	**Net Metering**
Average Annual Monthly Bill	**$101.96**	**$58.89**
Savings with Net Metering		**$43.07**
% Savings Annual		**42%**

Note: Summer months are June - September
Nonsummer months are October through May